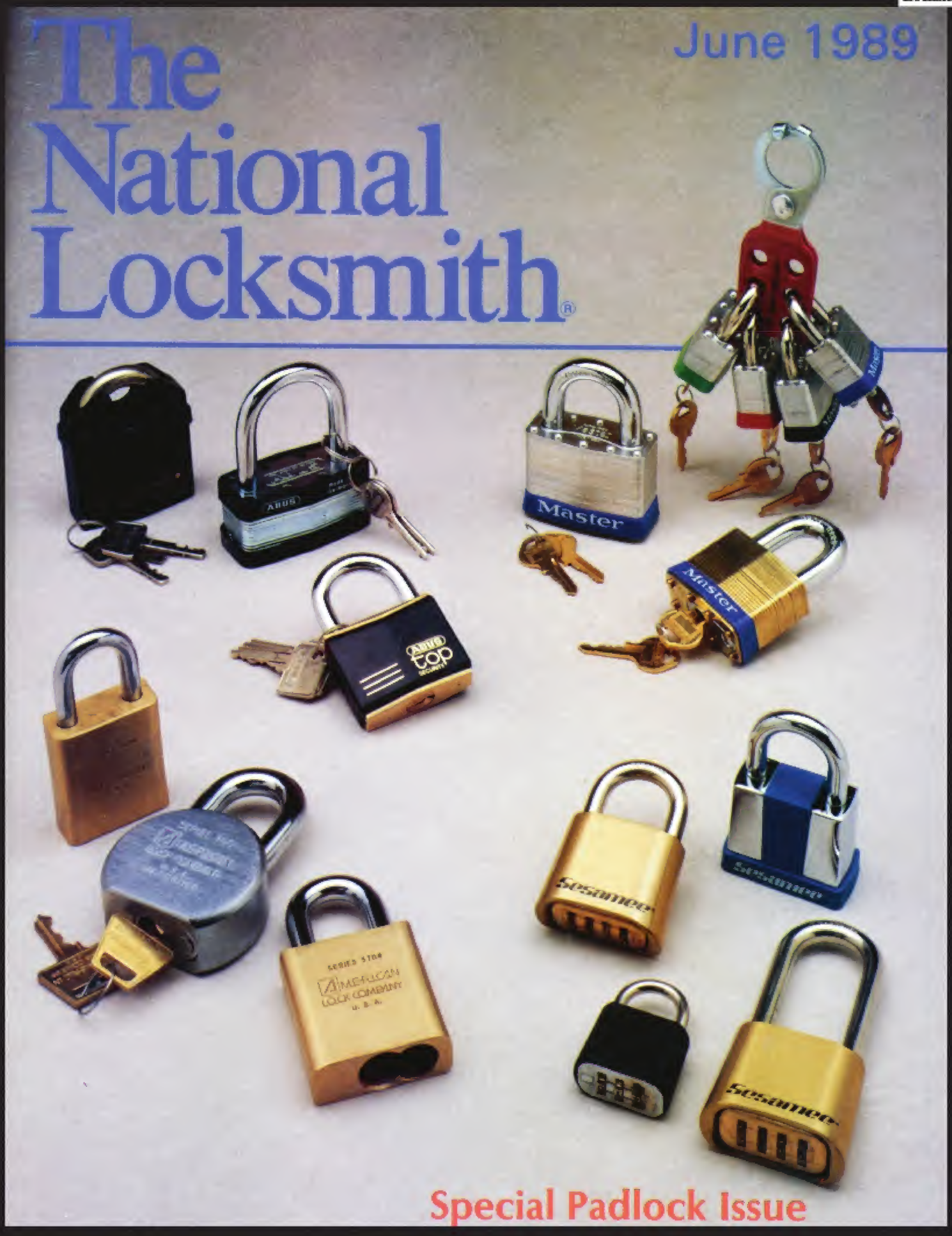
The National Locksmith

The National Locksmith®

June 1989



Special Padlock Issue

The National Locksmith • June 1989 • Volume 60, Number 6

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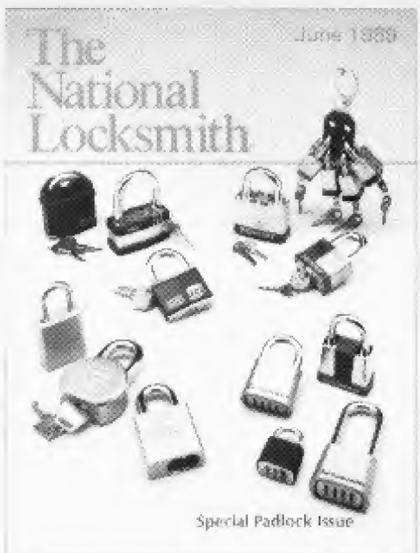

On The Cover
Featured on this month's **Padlock Issue** cover are the following companies: (clockwise from top left) Abus Lock Co.; Master Lock Co.; CCL Security Products; and American Lock Co.
(Photo by Bakstad Photographics)

Departments

The Audit Bureau

The National Publishing Company

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Commentary

Go For The Bucks!

Are you satisfied with the money you are making as a locksmith? I wonder how many can answer that question in the affirmative without even having to think about it. If you feel that you are not earning the amount you would like, then you must ask yourself a series of questions. After you have thought about your answers, you will have an idea of how to increase your earnings.

Are you an owner of a shop or are you an employee? Some employees actually earn more than some owners do. If you are an owner, then the first aspect to examine is your customer base. Simply put, do you have enough accounts? If you don't have enough to keep yourself busy, then you certainly won't need any employees. But if you don't have sufficient accounts, what can you do to change that?

Have you ever thought about putting on business clothes and going out to drum up more business? That's called salesmanship, something that many people are afraid to do. But if you take the trouble to *ask* for more business, you may actually get it. Every area has industrial centers. These are good places to seek more commercial accounts. Drop around select companies with business cards and a sheet explaining the services you offer.

The next thing you have to ask yourself is, "Am I charging enough for my services?" The busiest locksmiths I know are usually the most expensive ones. I think that is because they examine their overhead and realize that they must charge enough to make a profit. These are the shops that can afford to stay in business over the long haul. By making a profit you are ensuring the longevity of your company. As you acquire more accounts, you'll be able to afford to hire employees. Each time you add an employee, you can take on more accounts. This is how a business grows.

If you are an employee, can you help yourself increase your income? Often, the answer is yes! The better you do your job, the fewer call-backs you'll have. The faster you work, the more jobs you can cover. An employee who works hard and cares about his job is a valuable employee. There are not enough of them to go around. A truly good employee can do very well in almost any industry.

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We're giving away free digital quartz Locksmith Wristwatches! That's right, during our subscription promotion, we are giving away watches to locksmiths who are signing up for brand new subscriptions. And here's the best part. Even if you already are a subscriber to *The National Locksmith,* you can still receive a free watch. All you have to do is sponsor another locksmith (friend or employee) when they order the magazine. So if you've always wanted to tell the time with a Locksmith Watch, here's your chance. See pages 93 and 94 for more information.

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Here is another special bit of information. As you already know, code books from *The National Locksmith* already offer you the most complete system available. And we offer a free Code Hotline for all of our code book owners. Well, we have recently introduced a special Code Book Starter Kit. In this starter kit you will receive: all domestic auto codes; a wide range of shop codes; Master pin tumbler padlock codes; as well as complete depth and space information. Priced at well under $200, this kit is designed with the beginner in mind. See page 58 for more information.

Marc Goldberg

Editor/Publisher

Letters

Comments, Suggestions and Criticisms

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and lengths. Please address your comments, praise, or criticism to: Editor, The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107. All letters to the editor must be signed.

Wersonick Announces Candidacy for ALOA

I would like to announce my intention to run for the office of President of ALOA at this year's convention in Atlanta. I have had the pleasure of serving ALOA for ten years, having been elected from the floor in 1979. Six of those years were served as a director and four as Southwest Vice President. I have worked on the following committees: Finance, Membership, Public Relations, Publication, Education, Grievance, Ethics, Security Standards, Chapter, Nominating, and Education Review, and feel that this has given me the necessary background for the office of president. In addition, I feel that I have the confidence of the majority of the board in my ability to fulfill the duties of the office.

One of the most important duties of any ALOA president should be communication; with the board, with the staff, with the membership and with the rest of the industry and the general public. The president should create a feeling of confidence in the association that gains the respect of, most importantly, the consumer of our services, and, additionally, everyone in the security industry, whether or not affiliated with ALOA. I am eager to face these and all the challenges involved with this office.

Recently, with the advent of chapterization, the board has become much more aware of the will of the membership. As president I would encourage all members to voice their opinions with the assurance that they will be heard and given thoughtful consideration in all board decisions.

I ask the considered support of all ALOA members who believe that these goals should be served and that ALOA needs a leader who is dedicated to the principle that the Associated Locksmiths of America should truly be the representative of the entire locksmithing industry.

Evelyn V. Wersonick, CML
ALOA Southwest Vice President
New Mexico

McNickle Announces Candidacy for ALOA

The ALOA Nominating Committee has announced its endorsement of a slate of officers for 1989. I am honored to have been their preference for the office of President.

It has been a pleasure to serve on the ALOA Board since 1979, as Member-At-Large, Director, and as a Vice President, I have served on most ALOA committees, and currently serve as chairman of the Education and Personnel committees, and member of PRP, Finance, Education Program Review, and President's Advisory committees. Since December when I was nominated for the ALOA Presidency, I have been included in existing Presidential communications to prepare for a smooth transition.

The wishes of the member are both paramount and absolute, and we have an unequivocal need for stronger communication with the member, as well as a deeper commitment to direct member involvement. I am also strongly aware of the necessity to seek unification between the ALOA and other segments of our industry, including our wholesalers, distributors, other industry involved associations, and industry publications. It is my belief we are all seeking to upgrade the locksmithing industry to a more positive and greater level of professionalism. I am pledged to meet these challenges with initiative, enthusiasm, and effective leadership.

I am a certified instructor, a technical writer, and previously served four years as the President of the Oklahoma Master Locksmith Association. I must profess gratitude to the

OMLA for assisting me in reaching my present level of leadership and allowing me the opportunity to demonstrate my creativity in the formation and implementation of association projects and motivation of participation of members and other segments of our industry.

Participation of our members and other segments of our industry is what ALOA is all about. Participation which will assure us of success with the dynamics of a more professional image. I look forward to meeting these challenges and having the opportunity to meet with you as travel and communications bring us together in a unified effort which will make our association and the security industry more positive, more productive and more professional.

I urge you to attend the ALOA Membership Meeting at the Atlanta convention, to use your membership privilege to vote on the matters that concern the destiny of your chosen profession. I ask for your support, and involvement, to accomplish the challenges and goals which will be incurred with your vote of confidence.

Jerry McNickle, CML
ALOA Southcentral Vice-President

Deli's Get Slice Of Locksmith Business

The boys and I at S.A. Josephs were sitting around chewing the fat (we prefer Crisco). We have worked up a mighty important question, not to mention a swell sweat for your *Letters* column. It seems everybody and their brother is jumping into the locksmith industry these days. All the department stores, drug stores, home improvement stores, etc. All these facilities are gaining strong strides and making a substantial impact on the profits of us little guys.

Now the straw that broke Mohammed the camel's back. Deli's—yes your common local deli that sells sandwiches, sodas and now *locks*. Imagine this if you will...There I was standing in line, my deli number in hand ready to shout out my usual order for a spaghetti, crushed egg and mayo and beansprouts on a hard roll, when a small woman with a raspy voice bellowed out, "Give me a half pound of *locks* and six bagels."

You're probably standing beside yourself right now as I was in total disbelief. The common deli stooping ever so low as to sell *locks* in a totally unconventional sales environment. This leads me to my simple question for your column. What can we do?

S.A. Josephs
Pennsylvania

Editor's Note: Even your stuffy Editor loves a good tongue-in-cheek letter now and again.

April Commentary Receives Praise

For your April 1989 Commentary, I would like to say that you should get the Pulitzer prize.

This touched me in so many different ways. I'm going to take advantage of this article, with your permission of course, and make up flyers to pass out and mail out to my customers and future business customers.

Something about this article has also shaken me loose and opened my eyes wider than before to the personal aspect of this business.

I thank you for writing this.

Harry Chavez, Sr.
Maryland

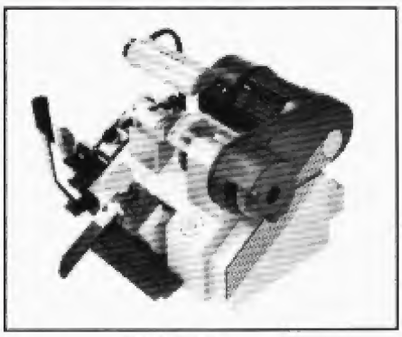
Editor's Note: I'm glad you enjoyed it. In fact, we've had calls from other

Continued on page 105

Enter the 1989 Technitips Contest

$$$ Thousands and thousands in cash and prizes! $$$

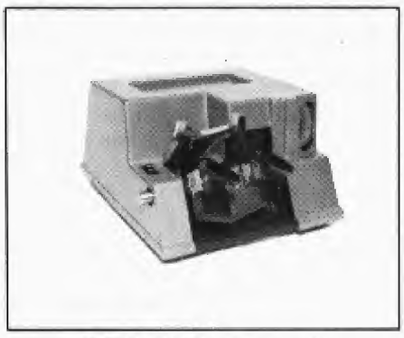
First Prize



HPC Bravo

The two speed motor cuts brass or steel. The 4-way vise jaws securely hold almost any key. A micrometer style depth adjustment and precise shoulder gauging cut the most accurate keys possible.

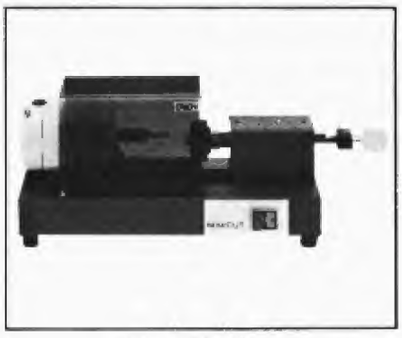
Second Prize



ESP 990 Manual

This machine features double-sided reversible jaws that eliminate the need for adaptors. The carriage is fixed to the sliding carriage shaft resulting in reduced play and less shaft wear.

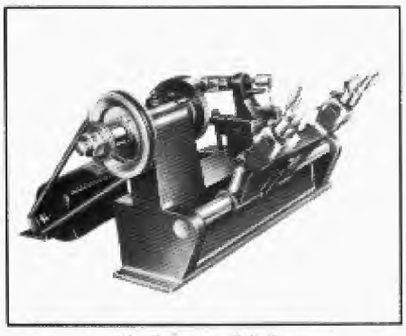
Third Prize



Ilco KD94

Cuts the 1137 tubular key, brass or steel accurately and quickly. Features include large chuck to hold standard size key heads, easily adjustable.

Fourth Prize



Belsaw 200

Duplicate, cut by code, cut flat steel keys. Complete machine with motor, three cutters, guides, and instructions. Built-in micrometer.

Fifth Prize

HPC 9160

Ideal for large key duplication. Equipped with fine double-sided jaws ensuring accurate cutting with little or no wasted blanks.

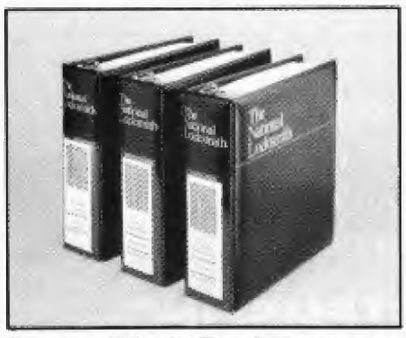
Sixth Prize

$150 Cash

Everyone can use a few extra dollars! This prize will brighten your day...and fatten your wallet.

********** **Code Books From *The National Locksmith*** **********

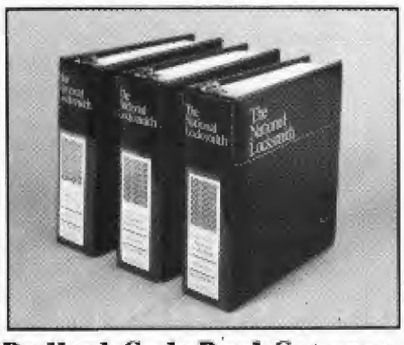
Seventh Prize



General Code Book Set (NGCB)

These three books contain 450,000 codes covering domestic lock and automobile codes.

Eighth Prize



Padlock Code Book Set (NPCB)

These three volumes offer 462,000 codes covering Dudley, American (Junkunc), Master and Yale.

Ninth Prize

Foreign Car Code Book Set (NFCB)

This two volume set holds 432,000 codes for the complete variety of foreign cars, from Alpha Romeo to Yugo.

Technitips

Helpful Hints from Fellow Locksmiths

Send me your Technitips. Who knows, you may be our next winner! c/o The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107.

by Robert Sieveking

Congratulations to all those who have had their tips printed this month. Thank you for your contributions. All monthly prizes will be sent out and the best tips will be entered in our year end contest.

The prizes you see here represent only a portion of the commitment to excellence that the writers and staff of The National Locksmith *offer to the locksmithing profession. The Technitips you read here are evidence of the commitment and resolve of others in the field. The rewards for their participation here are really great.*

The monthly and annual prizes listed on the facing page are some of the best in the industry. Get your tips together and send them in. Make sure you explain the Technitip and include drawings or photos where necessary.

I hope that you find some ideas this month that will improve the quality of service you give to your customers. Don't overlook the suggested reading lists on the pull out card.

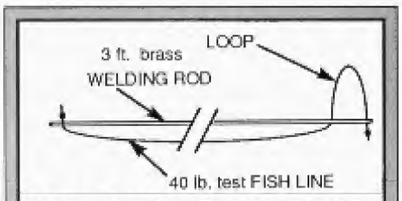
Tear out one of the "Rapid Reply Cards," and use it as a book mark as you read this month's magazine. When you see a product that is of special interest to you, circle the number on the card and send it. The Rapid Reply Card puts you in direct touch with the manufacturer. It's a great way to get more information on some of the new products on the market.

June's Best Tip

I realize that everybody has problems opening a car now and then. Under the glass tools will work fine about 99% of the time. This Technitip is for a "snare tool" that is designed to go after pulling the button up from the inside of the car. This tip is especially useful on late model Volvo autos.

The tool, shown in illustration one, is easy to make and works quite well on vertical lock buttons. It is made from a length of brass welding rod. Drill two holes through the rod at one end to make the loop or snare. Drill the third hole at the opposite end to keep the fish line from tangling. Debur the holes carefully to avoid fraying the braided line, and string the tool with 40 to 45 pound test fishing line, as shown in the illustration. Tie the line at both ends, leaving enough line to form the desired loop.

To use the tool, wedge the door above the button and insert the rod to place the snare over the button. Pull the fish line to close the loop



DRILL 3 HOLES IN THE ROD, AND STRING THE SNARE TOOL AS SHOWN.

Illustration 1

How To Enter

All you need to do to enter is submit a tip, covering any aspect of locksmithing to *The National Locksmith*. Certainly, you have a favorite way of doing things that you'd like to share with other locksmiths. Why not write it down and submit it to: Robert Sieveking, Technitips' Editor, *The National Locksmith*, 1533 Burgundy Parkway, Streamwood, IL 60107.

Tips submitted to other industry publications will **not be eligible**! So get busy and send in your tips today! You may win cash, merchandise, or even one of many key machines or code book sets! At the end of the year, we choose the winners of the listed prizes.

Last year dozens of people walked off with money and prizes. Wouldn't you like to be one of the prize winners for 1989? Enter today! It's a lot easier than you think!

Every Tip Wins 'Locksmith Bucks!'

Yes, every tip published wins a prize. But remember, you must submit your tip to *The National Locksmith* exclusively. Each and every tip published in Technitips wins you $25.00 in Locksmith Bucks! Use this spendable cash toward the purchase of any books or merchandise from *The National Locksmith*. You also receive a Bonded Locksmith bumper sticker, decal and patch. Plus you are now eligible for the really big prizes!

Best Tip of the month prizes!

If your tip is chosen as the best tip of the month, you will win $50.00 in cash as well as $35.00 in Locksmith Bucks! Plus you will receive a quartz Locksmith watch, a Bonded Locksmith bumper sticker, decal, patch and a Locksmith Cap. Plus, you may win one of the great prizes pictured above.

and lift the lock button. The end of the tool can be bent for best position of the loop. If the door is tight, place a rubber band or piece of tape around the rod and fish line, just above the loop. This will prevent the friction of the tool entering the door from pulling the string and closing the loop before it is in position. This tool can also be used to open windows or manipulate door handles.

Jim Alford
California

****

This Technitip deals specifically with a method I have used to restore a badly worn key without the need for disassembling the lock or decoding the key and making another to dimension or by code. This tip is especially handy for padlocks and foreign auto ignitions that might be very difficult to disassemble and repair. This method even solves the problem of wear in the pins, which would make even a code key work improperly.

Place the customer's key and a blank in the key machine, just as you would if you were going to duplicate the key. Now, carefully loosen the key vise on the customer's key and lift the key approximately 1/32" in the vise as shown in illustration two and tighten the key vise. If you do this very carefully, the keys will stay in gauge. Check the keys with the key gauge, to make sure that they are still in proper alignment, and duplicate the key as you normally would.

The key will be 1/32" oversize from the original and should work the lock cylinder. If the key binds as it is turned, check for impression marks. File the marks carefully to make the key work perfectly. This tip will allow you to make a perfectly working key from a worn key with only a few minutes work.

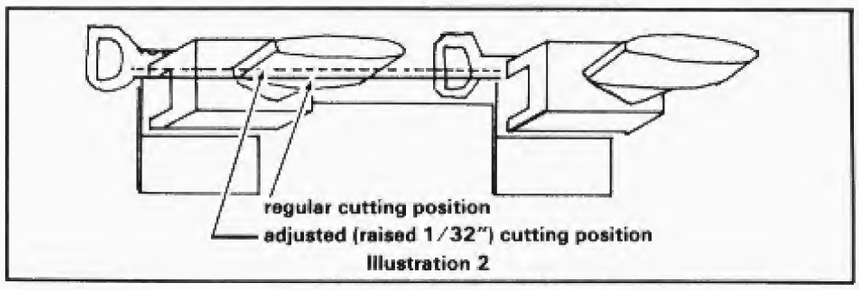


Illustration 2

I hope this procedure will be as useful to other locksmiths as it has been to me.

Gary Johnson
West Virginia

Editor's Note: Placing a sliver of a calling card or a cardboard shim under the pattern key will also make your key machine duplicate an oversized key. If you are using a Belsaw 200 machine, the micrometer follower could be adjusted to accomplish the same end.

****

This Technitip is for an improved filler for brass items. The brass shavings and filing dust that comes from hand filing or cutting keys can be mixed with clear epoxi to make a very satisfactory filler for drilled holes, cuts and gashes in brass locks. Mix the brass dust with the epoxi to form a stiff putty. Fill a little above the surface of the item being repaired and allow the epoxi to cure. Use fine grit sandpaper to sand the patch flush with the surface. The brass in the epoxi makes the filler more durable and less noticeable than other fillers I have used.

Andrew Nogaj
Camp Zama, Japan

****

This Technitip concerns removing broken keys from automotive locks. The best way to pull a broken key from a lock is to hook behind the key. To do

this, you must make a special extra thin key extractor which will pass *beside* the key to the rear of the keyway. With the extractor behind the key, you will have good balance on the broken piece and it will come straight out as you pull the extractor.

The extractor looks fragile, but it is not. Because you are not bending, but pulling straight, it has very good strength. The extractor makes pulling broken keys very easy. The hard work is making the extractor. The best method is to begin with a regular thin pick and hand grind to one of the shapes shown in illustration three. Finish the hook with a very fine hand file.

To use this extractor, simply slide the hook into the lock, beside the key to the rear of the broken piece. Illustration three also shows how the extractor is to enter beside the key blade. Once inserted, carefully turn the hook a quarter turn to catch or hook the rear of the broken key piece. Pull gently on the extractor, while you raise any tumblers that might be in front of the broken piece with another pick. You should have no problem removing the broken key. Good luck.

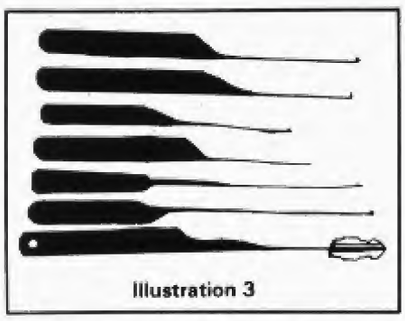


Illustration 3

Goren Agren
Sweden

Editor's Note: Music wire, available in diameters between .015" and .020", also makes good material for this type of key extractor. Cut a piece about 2" long, bend the hook in the end of the wire and hand grind to shape as above. Use a pin vise as a handle for the extractor.

****

This Technitip is for an inexpensive safe drill rig that is easy to make. Illustration four shows the drill rig as it would appear on the door of a safe. The tool is made from a 36" piece of round steel rod. An "S" hook is welded to the end of the steel rod, which is used to attach the lever to a length of chain.

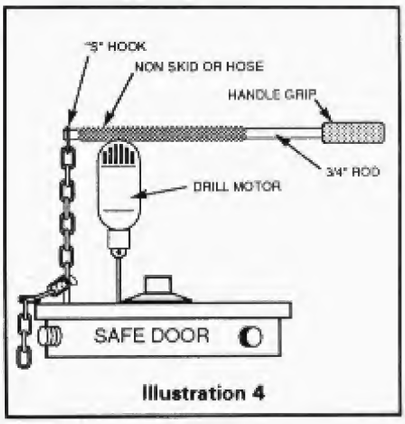


Illustration 4

The chain can be attached to an eye bolt threaded into a hinge or handle screw hole, attached to the safe handle or wrapped around the safe.

The lever bears against the back of your drill motor to increase the drill pressure when drilling the door. A piece of rubber hose or non-skid tape will prevent the drill motor from slipping while you drill. A plastic handle grip from a bicycle makes a good non-slip handle for the drill rig. Adjust the chain as you drill to keep the lever as close to parallel with the safe door as possible. This tool works quite well but

must be used with caution.

Bruce Andersen
New York

****

Many of the fine older homes in the city use mortise locksets to secure the outside entrances. Most of these locks have a thumb turn on the inside, within easy reach of either a side glass or a large glass in the door. A common request is to convert these single cylinder locks to double cylinder. The subject of the Technitip is a fast and simple method of converting these locks to the double cylinder function.

The first step is to check the lock to be sure there is a provision for an inner cylinder. If the mortise lock has provision for an inside cylinder, proceed with the installation.

Remove the knobs and all inner door hardware, escutcheons, turn-button etc. Install a 3" × 10" brass plate with knob ferrule. The plate should be of the correct finish to match the existing hardware. Use the knob spindle and knobs to insure perfect alignment of the new plate with the knob hub of the lockset.

Insure that the new plate has been installed parallel to the edge of the door and screw it to the door. The trick is to drill a hole in the inside plate that will perfectly align with the hole in the mortise lockset. For this you will need a pilot fixture from an Adams Rite installation kit or a fixture as shown in illustration five. The drill guide fixture shown in the illustration was made from a dummy mortise cylinder. The dummy cylinder was drilled, on center, for a ¼" pilot drill. (Drill the cylinder in a drill press to insure that the hole is perpendicular and straight.)

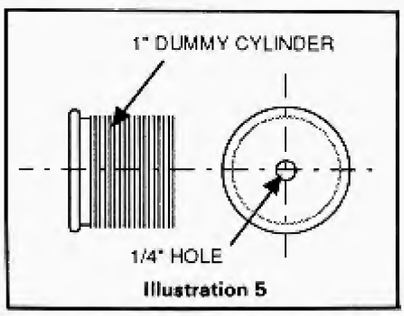


Illustration 5

Install the drill fixture in the outside cylinder hole of the lock and, using a ¼" drill bit, drill through the fixture, the inside of the door and brass plate. You now have a ¼" hole perfectly centered on the mortise cylinder. Use a hole saw from the inside of the door to enlarge the hole for the inside cylinder.

Clean any sawdust or debris from the lock and install new mortise cylinders. Check the lock for proper operation and the job is complete. Using this method, the door can be easily converted to double cylinder for higher security, without damaging the aesthetics of the mortise lockset.

Merle Hyldahl
New York

****

Picking the Dexter 3232 knob lock can be time-consuming if you don't know this little Technitip. A quick method of opening these locks is to insert a standard hook pick to the rear of the lock cylinder, just below the pins, out of the rear of the cylinder to connect with the locking rod. By wiggling the pick to the right, the lock button can be released, unlocking the door.

With a little practice, this trick can be accomplished in just a few seconds.

Robert Gervais
Michigan

****

Have you ever tried to remove the cylinder from the Ford squeeze type glove box lock? Removing the plug from these locks can be a little trying if you don't have the right tool. The Technitip for this problem is to make a spreading tool from an old pair of true arc ring pliers as shown in illustration six.

Use the type that spreads the ring. Grind the tips even, then shape them to a flat chisel-type point. By forcing the tips between the plastic ears and the lock plug, a slight squeeze will release the plug and it will drop out with no damage to the plug or the retaining ears. This tool greatly simplifies and speeds up removal of this lock to make a trunk key.

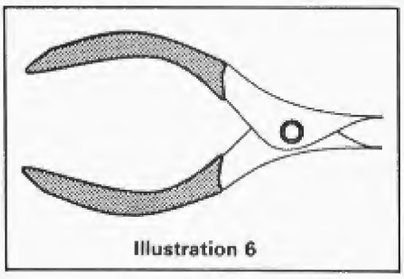


Illustration 6

E.D. Hoffman
Michigan

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My tip concerns a method of opening the GM trunk lock after the spring retainer has jumped into the drain hole. Most times the customer will come in to tell you that the trunk lock was working fine, and it just suddenly quit working. This problem is usually caused by the staking, which is supposed to hold the spring retainer in place, letting loose. The spring retainer is forced out of the lock plug by the wafer springs and jams in the drain hole at the bottom of the lock case.

Illustration seven shows the easy solution to the problem. Drill a 3/32" hole at the point shown in the diagram.

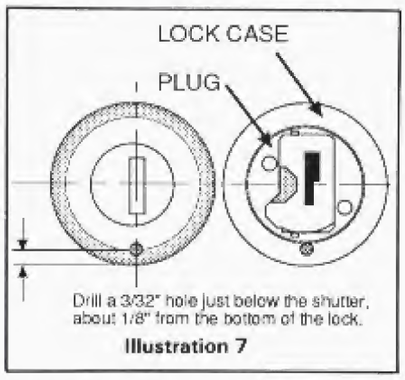


Illustration 7

The hole should be about ⅛" from the edge of the lock case. Center punch the location to prevent the drill from walking, and angle the drill up slightly. Notice that the drill must enter through the lock case shoulder. Be careful not to drill through the edge of the plug or you might ruin the lock or shutter disk. Drill no deeper than ¼" to avoid drilling into the spring retainer or springs.

After drilling the hole, simply insert a thin piece of spring steel or music wire to push up the spring retainer as you turn the key. The trunk will be unlocked and you can remove the lock to restake the spring retainer. Assemble the lock using a new face cap and reinstall. This method makes a fast professional job with no damage to the customer's lock.

Greg Oliphant
Illinois

****

My Technitip concerns a fast way to open a Kwikset deadbolt, when the actuator has been broken off.

Many times, the customer has difficulty extending and retracting the bolt

Continued on page 105

Newsmakers

New Products and Industry News

Payphone Technology's Phone Converters

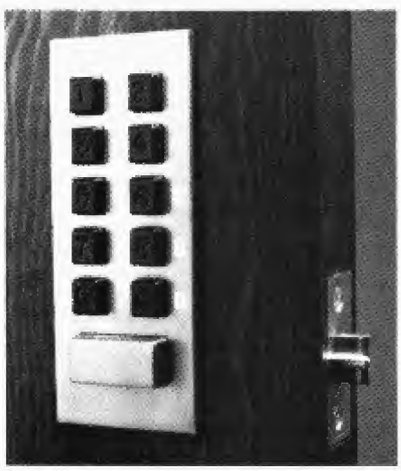
Payphone Technology's convenience payphones prevent unauthorized phone abuse, restrict long distance calling and generate 300% profit on the calls your employees and clients are already making.

Used in Europe for over 15 years, these commercial quality F.C.C. approved units simply plug into any standard phone jack and require no special installation or phone company fees. They convert to a conventional "coin-less" telephone with an owner's bypass key, and include an extended warranty.

Preso-Matic's 8200 Series Locks

Preso-Matic offers keyless mechanical pushbutton combination door locks with a hardened steel deadlatch spring bolt. They lock automatically when a door is closed, and unlock from the exterior only when the correct combination is pressed. The four number combinations offer 10,000 possible combinations and seven number combination locks offer 10,000,000.

These locks allow instant one button exit from the interior by pressing a steel unlock button. There are no knobs to turn or twist, and this eliminates key control problems.



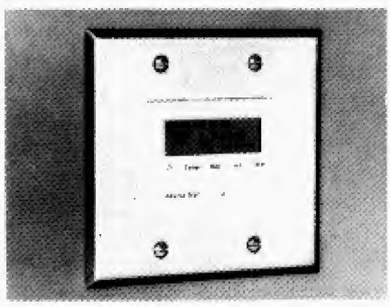
Exit Button/Paddle For Electronic Locks From ELS

The new heavy duty MED400 series exit buttons/paddles from ELS are SPDT momentary releases for eletrically controlled locks. Ideal for controlling electromagnetic and solenoid operated locks. Models fit standard gem box or narrow stile aluminum doors and entrances. Available engraved in red or blank. Packed with special tamper resistant security screws or can be mounted with pop rivets.

Alarm-Saf's New Flexi-Timer FT-200

The Alarm-Saf Flexi-Timer model FT-200 is a seven day multiple event timer with an accuracy of two minutes per year, and voltage operation of 6 to 24 volts AC/DC. Fast, easy programming and visual English language confirmation are features of this unit.

This model has 12 internal timers capable of a maximum of 84 events during the week, programmable by day or blocks of days, selectable model of momentary or maintained output form "c" 2 amp contacts, with the unique First Person In (No Holiday Programming) feature with an onboard lithium battery (10 year shelf life) to retain programming if system power is lost.



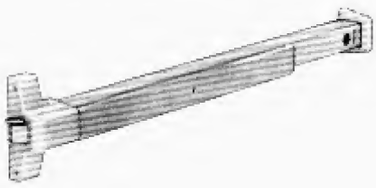
A complete mounting kit is supplied for mounting in a cabinet or double gang flush plate for high visibility and accessibility.

Trans-Atlantic's New Touch Bar

Trans-Atlantic Company announces the availablity of a UL listed touch bar rim exit device series for use with narrow stile trimline doors. It is usable on a door stile as small as 1¾".

This product available in three commercial finishes (aluminum, duronodic and bronze color). Also, this model is available in an all stainless steel construction in US32D finish.

Many popular exterior access accessories are available for this device.



Selling Services Promotes Traveling Lock Show

Selling Services, Inc., a Georgia based marketing firm credited with the successful completion of 50 trade shows for the electronic security market will provide their services to promote and sponsor the "Traveling Lock Show." Manufacturers and distributors of builder's hardware and physical security equipment will be exhibiting. Attendee's will include all locksmiths, general contractors as well as architects.

The "Traveling Lock Show" will provide a comfortable atmosphere for introducing new products to your customers and new customers to your products. Selling Services promotes the "Traveling Lock Show" with national and regional advertisements, direct mail and a telemarketing staff that invites all attendee's to enjoy our complimentary food and beverages while attending the show.

Timetronic Technology's New 'Wedge Alert'

Timtronics Technology, manufacturer of security alarms and anti-intrusion devices for homes, apartments, and small businesses, introduces the Wedge Alert™, a new, low-cost unit designed to secure inward-opening doors, and to alert occupants in the event of attempted forced entry. Announcement of this new device and its availability are designed to complement Timtronics' Knight Stick™ Wireless Electronic Alarm for sliding doors and windows which was first unveiled earlier this year.

The Wedge Alert is ideal for securing hotel and motel room doors, as well as for home and business use.

Sieveking Product's Improved Amplifier

Sieveking Products Company introduces the new CA-387 contact amplifier to its growing line of professional tools for the locksmith. The CA-387

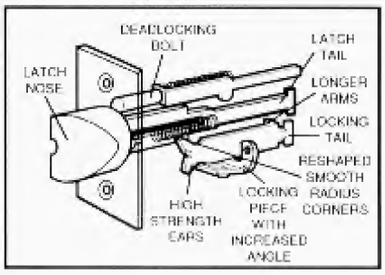
features new high frequency filtering that eliminates normal room noises, allowing the locksmith to concentrate on the contact points. New electronic circuitry allows the manipulator to zero in on the safe lock by boosting the high frequency clicks and eliminating the lower frequency noise.

New Cylindrical Latch From Marks Hardware

Marks Hardware announces a newly redesigned and improved latch for its Grade 1 and Grade 2 cylindrical locksets. These improvements will assure smooth functioning and proper "timing" of the latch mechanism for better service under all conditions.

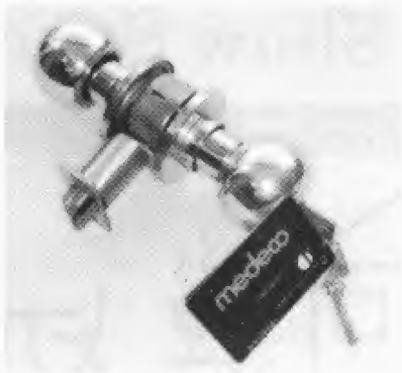
The new latch features an increased angle on the locking piece so that the deadlocking bolt releases with minimum pressure.

A reshaped and strengthened locking tail assures smooth and positive latchbolt retraction when the deadlocking bolt is depressed (closed door position). Longer "arms" assure constant engagement with the latch tail.



Champs Enhances High Security Locks

The Champs lock protection shield enhances Medeco and Abloy deadbolt locks against mechanical entry. Most high security locks such as these are in use today in top level government agencies, national security and prison facilities. Now, with the use of Champs these locks are more secure.



New Von Duprin Mini Power Supply

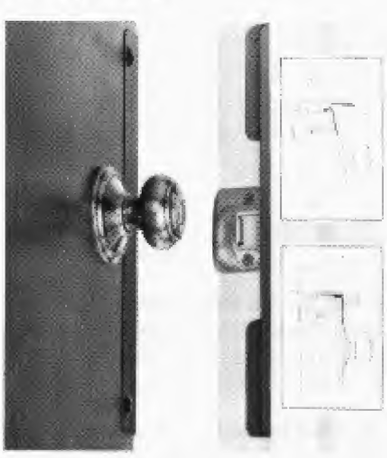
The new Von Duprin MPB-851 Mini Power Supply incorporates a Delayed Relocking Module that provides selectable relocking time for use with magnetic locks, electric strikes and Von Duprin 99 and 33 Series exit devices with electric latch retraction.

The new unit provides selectable relocking times from 0-155 seconds. In magnetic lock installations, this delay can be set so that the door has time to close completely before the magnet is actuated.

Omni Concepts' Forced Entry Deterrent

Omni-Guard® from Omni Concepts, is the only product on the market that protects residents, guests and personnel from door jamb spreading and credit card entry on all 1¾" in-swinging doors, and that can be used with any locking system.

This simple, reliable and inexpensive forced entry deterrent features two cold rolled steel strips with interlocking edges that automatically bind together whenever the door is closed. When Omni-Guard interconnects the door and frame, it helps prevent prying or frame spreading.



Chrysler's New Lock

"There will be a fairly radical change in the way we make keys for Chrysler products. Hopefully, this will make them more profitable for us to service."

by Robert Sieveking

Chrysler Corporation, in their continuing effort to forge new frontiers in the automotive industry, and following the example of the majority of the Japanese competition, will be using a new locking system on the Dodge Spirit and Plymouth Acclaim in 1989. (*See photograph 1.*) Plans are to have all Chrysler passenger cars, Dodge trucks and Jeep/Eagle vehicles on the new system by 1991. This means a fairly radical change in the way we make keys for Chrysler products. Hopefully this change will make Chrysler products more profitable to service for the informed and prepared locksmith.

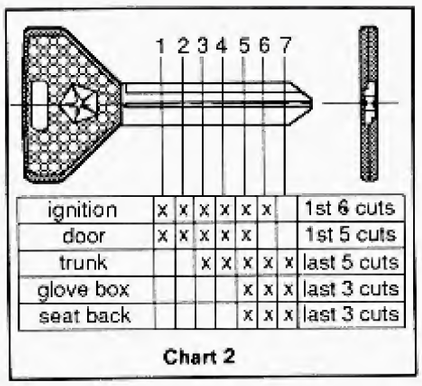
1. 1989 Dodge Spririt.

The new locking system will have some distinct advantages. First, and most obvious is that the new keys are double-sided. This adds the convenience of being able to insert the key into a lock either side up. Sadly, this spells the end for people inserting an ignition key into the ignition lock upside down and getting the key hung up on the key alarm buzzer lever. Broken keys in the ignition lock have always been a pretty good money maker around here.

The second, less obvious advantage of the new locking system is that one key will operate all the locks on the car. This means that we will only need to make one key for the car, unless the customer also wants the valet key. The master/valet function will preserve the security of a two key system by allowing the car owner to give a key (the valet key) to a parking attendant that will allow the attendant to open and start the vehicle, yet not permit access to the security storage areas. The rear compartment (trunk), glove box and seat backs cannot be operated by the valet key.

The seat backs on the Dodge Spirit fold down, to allow the owner to haul long items. Folding down the rear seat back allows open access to the trunk. This may eliminate some "keys locked in the trunk" calls, or make the job of getting the trunk open a lot easier. Fortunately the seat back locks only use three tumblers: the last three cuts in the key.

The master/valet system is quite simple; borrowed to some degree from the Toyota master/valet system using the T80R/T80S keys. To accomplish the master/valet keying, each lock on the car uses only a portion of the cuts in the key. Chart two shows the arrangement of the tumblers for the various locks of the car.



ignition	x	x	x	x	x	x		1st 6 cuts
door	x	x	x	x	x			1st 5 cuts
trunk			x	x	x	x	x	last 5 cuts
glove box					x	x	x	last 3 cuts
seat back					x	x	x	last 3 cuts

Chart 2

The ignition lock has the best security, using the first six spaces of the key. The door locks use the first five cuts of the key. Note that the seventh space of the key is not used in either the door or the ignition lock. This space is reserved for the security compartments. Only the trunk, glove box and seat backs use the seventh cut of the key, as shown in the chart.

The key used in the new system has a fairly substantial blade. Even when cut to the deepest depth on both sides, it doesn't look like it will break off and end up at the bottom of some keyway. The side milling is only for show, as the keyways on all the locks I have seen so far are very similar to the Toyota, Dodge Colt or Ford. There are two primary wards that require the key to be of the offset type, but no secondary wards that would require other side grooves in the key. Briggs & Stratton presently makes the locks and keys for these cars.

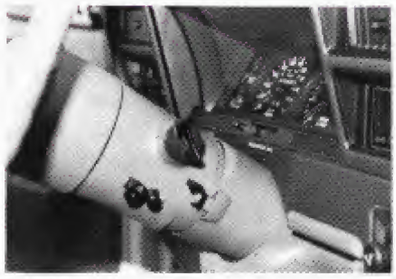
The "master" key is a rubber head blank, and is available under the Briggs part number 594145. The key is available under as a Curtis Y-154, Silca CY16, Ilco P-1789 or Ilco E-Z Y-154.

Valet blanks, to my knowledge, are only available from Briggs & Stratton. The only difference is that the valet key is labeled "valet" and the head is not plastic coated. For all practical purposes, there could be valet keys hiding in those plastic heads, masquerading as master keys. The Briggs part number for the valet key is 321566.

The codes for these locks have been a slight problem. Like most new things, the start-up is the hardest part. No matter how good the idea is, system bugs and initial confusion raise havoc in the first months. The new Chrysler locks, as I understand it, began using an "F" code series. (F0000 to F1394 to be exact.) Because of adjacent cut difference problems, very much like the new Honda series, the codes were revamped and will become "G" series codes. The Chrysler locks will be released with the "G" code stamped on the ignition locks.

A close look at photograph three will reveal the code GQ Ø 25 stamped on the ignition cylinder. The "F" code has been blacked out by the manufacturer. I thought it interesting that the manufacturer used an "Ø" to distinguish the "zero," as opposed to an "O" for the

3. Ignition cylinder with code stamped on it.



4. Ignition lock on a Chrysler tilt/telescope column.

5. Depressing the retainer; note the poke hole.

letter O.

The new code series is now available from Curtis industries under the part number 20455. The nice thing about the Curtis codes will be that both the "F" and the "G" series will be in the same book. Some of the first cars manufactured may be found with the "F" code series.

The new code card for your HPC 1200 machine will be X-59, using the CW1011 cutter. The key is gauged from the tip and the cuts are listed from bow to tip. There are seven cut positions in the key and four depths used in this code series. I have only found the code to be stamped on the ignition lock case.

Don't accept this as the final word though. The car I was privileged to disassemble and inspect was just off the truck, in the first shipment received at the dealer. Before things settle out, there may be codes on other locks in the car.

The ignition lock found on the Chrysler tilt and tilt/telescope columns shown in photograph four will be immediately recognized as the standard format used on all Saginaw columns. The cylinder retainer is the spring latch type used on pre-1979 GM autos. Disassembling the column is unchanged. Remove the horn pad, wheel, lock plate and turn signal switch in the standard manner. Using an ice pick or other pointed tool, depress the retainer. (*See photograph 5.*) The retainer poke location is below and to the right of the turn signal mounting screw tower, as shown by the point of the tool. Removing the ignition lock to make the key for this car by code, may be the easiest method for the majority of the locksmiths called to service these cars. Cars not equipped with tilt or tilt/telescope columns will use the larger format Chrysler type ignition cylinders.

Lock-out servicing on the new Chrysler autos is pretty straightforward. The new locks have a free action cam. Though this might make you think that going for the lock cam would be your best bet, forget it. The lock cam is guarded by the unit-lock retaining

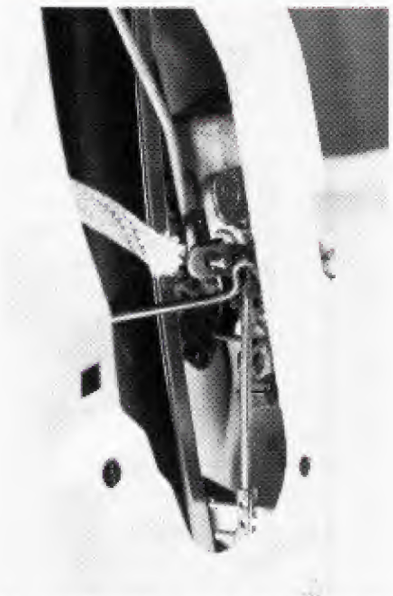
bridge, which shields access to the lock cam and its linkage.

The "Z" tool, bent as shown in photograph six, to form a slight inward bend will open the car in short order. Wedge the glass about two inches forward of the lock button, just about even with the front edge of the unit-lock handle. Insert the "Z" tool into the door until the hook is about four inches below the unit-lock handle. Turn the hook toward the inside rear corner of the door, and move the tip of the tool toward the rear of the car until the lock button wiggles to confirm contact with the lock linkage.

Photograph six shows the position of the hook, as it would be inside the door. Photograph seven shows the position of the tip of the "Z" tool at this point. Lift the tool to unlock the door.

6. Z-tool with proper bend to open the Spirit.

You will also notice in this photograph that there are two linkages on the lock lever. The upper linkage goes to the lock button and the lower linkage is for



7. Proper positioning of the Z-tool on the lock mechanism.

the electric lock actuator. Another method of unlocking this door would be by lifting the button with an under-the-glass tool which contacts the button rod immediately under the lock button, to lift the button.

Servicing the door lock cylinders on the '89 Dodge Spirit is not at all difficult if you can find all the screws holding the door panel in place. There is only one visible screw holding the door panel in place. That screw is located behind the door release handle.

The plastic trim around the electric lock switch conceals two more screws. By removing the door lock/latch release panel, a fourth screw, which secures the door pull handle, is visible at the rear of the opening. Carefully disconnect the electric lock switch and set it aside. The window regulator switch panel snaps in place. By lifting the front of the plate, it will snap up and can be removed. Disconnect the electrical harness as shown in photograph eight.

One final screw remains hidden in the carpet at the lower rear edge of the door panel. Loosen the screw, and the panel can be removed by prying up a

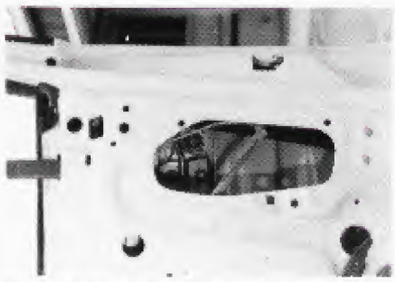
8. Properly disconnected wiring harness.

number of wire, scissors type panel clips. I guess the "one-way" plastic clips did not make it into the '89 Chrysler products. (Thank goodness.)

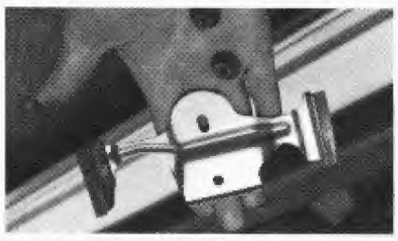
Pull the panel away from the door and lift at the rear to remove from the door. The hole that allows free accesss to the outside lock cylinder and pull handle is shown in photograph nine. Though you can clearly see the rear of the lock cylinder, I could not find a way to remove the wire clip that holds the cylinder in place without removing the unit-lock assembly.

Removing the unit-lock assembly is not as complicated as you might expect. Removing two washer faced nuts will release the bridge that holds the handle assembly in the door, and allow the lock retainer clip to be removed or the entire handle to be removed from the door.

By removing two washer faced nuts, the bridge that holds the handle assembly to the door can be removed. (*See photograph 10.*) This will allow the lock retaining clip and the lock cylinder to be removed. Or, by disconnecting the lock linkage and the lift handle linkage, the unit-lock assembly can be removed from the door, as shown in photograph 11.

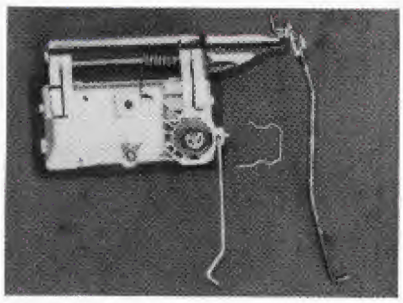


9. Lock cylinder access hole.

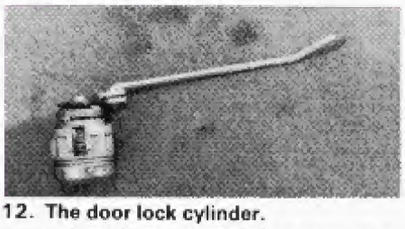


10. Handle assembly bridge.

The door lock cylinder (*see photograph 12*) is easier to service than most I have seen. The cap can be removed with the edge of a coin or a screwdriver and is reusable. An "E" ring secures the free action cam to the rear of the cylinder assembly. The spring at the rear of the cylinder is a "centering spring." This brings the lock plug back to the center or home position when the key is released, for easy removal. By removing the cam and face cap, the plug can be removed out of the front of the lock case. A key could be fit to this cylinder, but the key would only work in the opposite door. The door locks only contain five of the seven cuts necessary to make a master key.



11. Unit-lock assembly.



12. The door lock cylinder.

The seat back lock, shown in photograph 13 is retained by a spring retainer at the rear of the lock. The lock assembly is mounted to the seat back by two Phillips head screws under the lift

13. Seat back lock.

14. Exposed lock and actuator linkage.

handle, but the assembly resisted my best attempts at removal. The lock cylinder only contains three wafers, so unless you are rekeying all the locks on the car, you probably won't have occasion to remove this lock. I'm sure the lock plug can be removed in the unlocked positon, without removing the entire assembly.

The glove box lock on this car is the squeeze type. The cylinder is held in the lock by two tabs that must be spread apart to allow the cylinder to be removed. The lock uses only the last three cuts in the key. The same snap-in wafers are used in this lock as the other locks on the car.

The trunk or rear compartment lock is partially concealed by the reflector/back-up light assembly. At first glance, the lock appears to be in the body of the vehicle, but the lock is actually in the lid. I'm not sure, but I believe that the mechanical remote trunk release is standard equipment on this body style. There is a security switch/lever on the latch mechanism which disables the remote release control in the passenger compartment.

I did not find a code on the trunk lock cylinder of this car. The cylinder is concealed from the rear by a plastic shield. The plastic shield has been removed in photograph 14 to show the lock and actuator linkage. The lock is held in place by the threaded nut type fastener that is common on current model Chrysler products.

Because the lock is concealed by the reflector/back-up lamp assembly, the reflector must be loosened from the trunk lid before the lock can be removed. By removing four plastic nut/screw protectors behind the reflector and two Phillips head screws above the licence plate frame, the reflector can be lifted to allow the lock to be removed. Don't forget to remove the back-up light.

The trunk lock uses the same snap-in wafers as all the locks on the car. Disassembly requires that the face cap of the lock be removed. The face cap is not reusable and should be replaced with a Briggs & Stratton PN #321710 replacement cap.

The three methods for making a key to this auto if the codes are not available, and that would seem to be the most reliable, are: 1) Remove the ignition lock and make a key using the code found on the ignition cylinder.

2) First, remove a door lock to make a key having the first five cuts of the unknown key, then progress the cuts in the sixth position to make a working ignition key. Finally, progress the cuts in the seventh position of the key to make a working trunk key.

3) Read a door cylinder, to make a working first key for the doors. Read a glove box or seat back cylinder to find the cuts in the sixth and seventh positions of the key.

Thanks to Dave Luz and Dodge City of Rockford, IL for the use of their automobile. ■

Padlock Review

There are many padlocks available in today's market. Therefore, there is certainly a product available to fit any purpose and price range. By being aware of the range of padlocks offered to you, you can best help your customer choose the right product. Here is a good sampling of padlocks. Although there isn't space to show each lock made, this is a good overview. Feel free to circle the numbers of interesting products on the Rapid Reply card. You'll receive information from the manufacturer.

Abloy Disklock Brass Padlocks

The Abloy Disklock models 3545 and 3546 padlocks feature a chrome-plated brass body and a case hardened steel 5/16" shackle with 1" or 2" shackle clearance.

Like all Abloy padlocks, these incorporate heel and toe deadbolt locking design and provide over 9,000 pounds of shackle pull resistance.

Both models feature the 11 disc cylinder and are rekeyable. These padlocks can also be keyed together with any product in the Abloy Disklock product line.

Circle 247 on Rapid Reply

Abus Granit Rekeyable Padlock

The Abus Granit 36/55 top security class rekeyable padlock is constructed of solid hardened steel and is sheathed in durable black vinyl. Both lock body and extra strong double bolted shackle are made of a superior strength, hardened to-the-core steel alloy.

The full black vinyl sheath provides excellent protection to the chrome plated body while enhancing the overall appearance.

Circle 248 on Rapid Reply

Almont Lock Co.'s 'Re-Key' Padlock

The Re-Key Padlock from Almont Lock Company is so named because it can be re-keyed quickly and easily. A simple tool retains all drivers and springs which permits plug removal with tumblers exposed for instant rekeying.

The Re-Key saves time and work because there's no need for drilling, riveting or grinding.

The key cannot be removed when the padlock is open. Two solid balls are forced into the sides of the shackle when locked. Seven keyways are available.

Circle 249 on Rapid Reply

American Lock's Camouflaged Lock

American Lock Company, has created a new outdoor camouflage padlock. Like a chameleon, the padlock blends with its outdoor surroundings. Though barely visible in natural environments, the new camouflage padlock provides hidden security for the specialized needs of campers, hunters, and military enthusiasts.

These unique solid body aluminum camouflage padlocks feature a long-lasting anodized finish in patterns of olive green, rust and forest green.

Circle 250 on Rapid Reply

CCL's Sesamee Personal Padlock

The 436 Sesamee all-brass padlock from CCL Security is ideal for outdoor use when complete safety is desired.

Rugged, case hardened steel shackle is zinc-plated to resist corrosion. The Sesamee padlock can be used under all conditions while assuring long satisfactory service.

The "padlock without a key" features easy-to-set opening number combinations that can be changed at any time by the user.

Fort Lock's PK-2 Padlock

Fort Lock Corporation introduces the PK-2 padlock with 2½" solid steel wide body and two shackle lengths, 1½", 2⅞".

The PK-2 is available in three tubular key series, Fort Lock Gem, Gematic, and the new Apex High Security. Locks may be keyed alike, keyed different, master keyed, and registered keyed for customers' exclusive use. The PK-2 padlock is featured in the new Fort Lock number 16 Full Line Locksmith Catalog.

Hampton Lock's Portable Vault

The Lok Box™ measuring 2⅝" × 7½", is now available from Hampton Lock Company. This patented box features a double security lock box. The upper padlock incorporates a modified shackle designed to go around door knobs, rods, etc. The inner compartment is covered with a sliding door including a 4 dial resettable combination lock.

There are numerous applications besides the obvious real estate market.

Hartwell Corp.'s Shack'L Shield®

The Hartwell Corporation is announcing a new line of padlock hasps that are designed to prevent the use of bolt cutters and prying tools on an installed padlock.

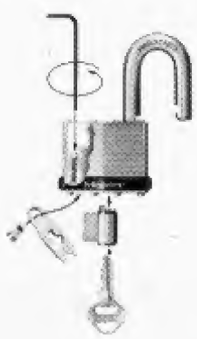
Once mounted, the new hasp, named Shack'L Shield®, wraps a shroud of ⅛" stainless steel around a padlock's vulnerable shackle.

Ideal for a variety of maximum security areas, the hasp design also eliminates the exposed staple that typical hasps employ and installs with ¼" through bolts.

Master's Low Cost Rekeyable Locks

Designed for industrial and institutional security systems, Master Lock rekeyable padlocks offer maximum security and convenience with low overall maintenance costs. Anytime a breach of security is feared due to employee turnover or loss of keys, simply replace the inner cylinder of the lock and security is restored.

All it takes is a Master replacement cylinder and an ordinary hex wrench.



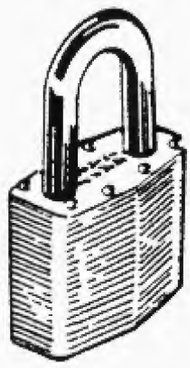
S. Parker Offers Bank Vault

Called the "Bank Vault," this solid case-hardened steel padlock from S. Parker has a replaceable solid brass pin-tumbler cylinder that locks both legs of its shackle. It measures 2½" and is available with a long or short shackle. It has heavy chrome plating for weather resistance and a classic design that has "rounded shoulders" to ward off hammer blows.

Trans-Atlantic's Padlock Line

Trans-Atlantic Company offers a wide assortment of carded and keyed alike padlocks. Fine quality solid brass pin tumbler padlocks with extruded solid brass cases are available at low costs.

Also, laminated steel case padlocks with solid brass pin tumblers are offered at competitive prices.



Abloy Disklock Security Locks

The Abloy Disklock models 3585 and 3586 padlocks feature a chrome plated case hardened steel body and a case hardened steel 7/16" shackle with 1" or 2" shackle clearance.

Like all Abloy padlocks, these incorporate heel and toe deadbolt locking design and provide over 9,000 pounds of shackle pull resistance.

Both models feature an 11 disc cylinder and are rekeyable. These padlocks can also be keyed together with any Disklock product.

Security Brass Line From Abus

Abus Lock Company recently introduced the new 87 series brass padlock line. The new Top Security class padlocks feature a solid brass body enclosed in an attractive black industrial strength vinyl sheath.

A special steel alloy hardened to-the-core provides extra shackle strength and is double-bolted with extra strong bolts. The 87 series has a 6 pin solid brass pin tumbler locking mechanism and features a special keyway.

CCL's Series 500 Sesamee Lock

The Series 500 Sesamee, "personal padlock without a key," is constructed with a pressure cast black epoxy body and a hardened steel shackle, by CCL Security.

With over 10,000 possible opening number combinations, that can be easily set or changed by the user, the Sesamee Padlock is particulary suited outdoors where complete safety is needed.

The shackle resists corrosion and will withstand adverse conditions.

Safety Lock-Outs From Master

Pending OSHA regulations make providing ample employee protection vital. The Safety Lock-Out system from Master Lock helps safeguard work teams against accidental injury and preserve equipment from inadvertent damage.

The No. 420 Safety Lock-Out secures switches and valves in a neutral or off position during system maintenance until all members of the team are clear of danger. Up to six personal padlocks can be applied to the device.

S. Parker Packs Twin Padlocks

To serve the market that needs to lock two places but carry one key, or remember one combination, S. Parker Hardware Mfg. Corp. has packaged two of their top-selling padlocks in pairs.

They've put the S. Parker 1½" "Big Shot" locks in one package with four of the same key. Laminated steel, double-bumper and brass pin-tumbler are featured.

For locking two places with a combination lock, they offer two locks with the same combination.

Servicing General Mortise Locks

"One may do a bit of head scratching trying to figure out how to remove the handles and spindle. There are no pins or screws visible and no holes in the rosette."

Send your lock and key questions to Jack Roberts, *The National Locksmith*, 1533 Burgundy Parkway, Streamwood, IL 60107.

by Jack Roberts

Although a mortise lockset is a mortise lockset and all of them, regardless of the manufacturer, have the same general (pardon the pun) appearance, there are some differences in the manner of servicing each model or design.

When approaching a General lever handle mortise lockset for the first time one may do a bit of head scratching trying to figure how to remove the handles and spindle. There are no pins or screws visible and there are no spanner wrench holes in the rosette.

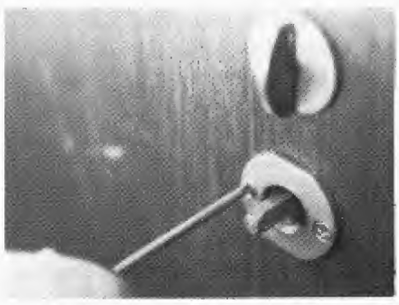
The thumb turn is easy enough—remove the two screws and remove the thumb turn. The cylinder follows usual procedures. Remove the face plate and the cylinder set screw is right where it should be. But what about handles and spindle?

The answer is to unscrew the interior rosette. (*See photograph 1.*) This may be done with finger pressure or it may take some persuasion with a pair of channel locks (use some type of protective cover so as not to leave teeth marks on the rosette) or a small strap spanner will do the job. The interior handle is attached to the rosette with a Waldes type retainer ring and will pull off of the spindle when the rosette is

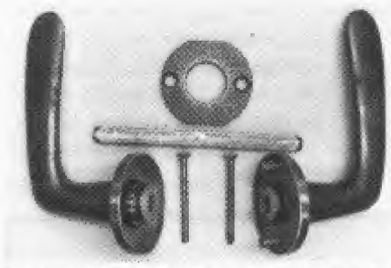
1. Unscrewing the interior rosette.

clear. You will note that the spindle is not threaded.

When the inside handle is removed the rosette retaining plate is visible with two screws. (*See photograph 2.*) When the two screws and the plate are removed, the outside handle assembly and the spindle can be removed from the door. The complete handle, spindle and rosette assembly is shown in photograph three.



2. Exposed rosette and retaining plate with screws.



3. Handle, spindle and rosette assembly.

When the face plate mounting screws and all of the exterior components have been removed the lockset can be extracted from the mortise cavity. Disassembly of the older cast iron case mortise locks for service is rather simple. Remove the cover plate screws and lift off the cover, carefully.

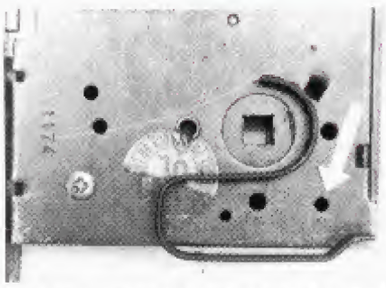
The newer all steel cases, such as the General Lock described, can cause some problems if care is not exercised. Due to the construction of the steel cases, the spindle hub return spring or springs must be relieved or removed from some models before attempting to remove the case cover.

The Atrium narrow stile lock can really be dangerous if an attempt is made to take it apart without first relieving the hub spring to say nothing of the time lost trying to find parts that may have gone flying to a remote corner.

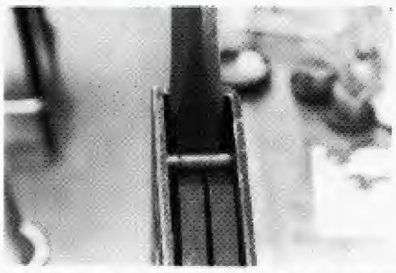
The General Lock Co. mortise lockset has stamped on the cover plate, "CAUTION. Remove hub springs before opening case." If you have been slapped in the chin with a cover plate just one time you will pay attention to the next warning or caution that you run across. It may take a few moments of examination to determine just how to remove or relieve the springs, but this is time well spent.

The hub return springs of the General are held in place by a removeable pin located in the lower rear corner of the case. The relative position of the hub springs and the retainer pin are shown in photograph four.

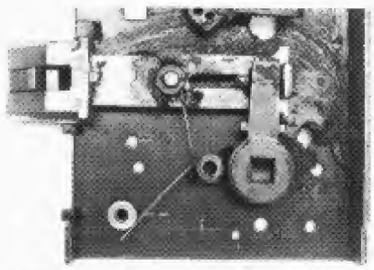
Hub spring pressure on this pin is relieved and the pin pushed from the case allowing the springs to be removed. Now, that's pretty easy to say, but doing it is something else. There must be a plier type tool for accomplishing this job, but we have not yet seen one.



4. Arrow indicates hub springs and retainer pin position.



5. Wide blade screwdriver held against the springs.



6. Door handing change completed.

We have tried various methods and have found that the safest one is to clamp the lockset in a vise, place the tip of a wide blade screwdriver (at least ½") against the tip of the springs (*see photograph 5*), apply steady pressure and push the retainer pin from the case. The retainer pin is not a force fit, like a roll pin, and can easily be removed. Back off slowly with the screwdriver until pressure is relieved and remove the springs.

We strongly recommend that you *do not* try to wrestle this lockset around in your lap, hold it between your knees, or otherwise try to muscle these springs. You could get hurt.

There is one case coverplate screw, opposite the spring retainer pin (*see photograph 4*), but this won't get the cover off. The case front plate must be removed by extracting the two screws which hold it to the case. The coverplate has tabs which fit into tab slots in the case and when the front plate is removed the coverplate can be lifted clear of the case.

Our service for this lockset was to change the handing (the door had been moved to another location). This is accomplished by removing one hub, removing the latch spring retainer washer and latch spring, reversing the latch, replacing the latch spring and its retaining washer, and replacing the hub. (*See photograph 6.*)

Reassembly of any mortise lock will often cause a moment or two of juggling as we try to line up the spindle hub, hub stop guide, thumb turn hub, and perhaps the set screw guide while getting the case cover back in place. With the hub spring pressure removed, the reassembly job is a bit easier and the only thing that needs attention is the deadbolt hub which can be held in place with the tip of a screwdriver through the case cover hole. The one case cover screw of the General mortise lock should be replaced to hold things together while attaching the front plate.

When it is all together and operating properly the lockset should again be placed securely in a vise, the hub springs placed into position and pressure applied to the tip of the springs while replacing the spring retainer pin. Be careful! These springs are strong. Insert the outside handle assembly, attach the retainer plate with its two screws, place the interior handle on the spindle, slide it into position and tighten the interior rosette for the completed job.

Since this job was changing from a right hand to a right hand reverse bevel the door did not have to be rebored for the cylinder and thumb turn nor did we have to change the handles. If changing from right to left the handles would have to be changed due to their design. This is easily done by removing the

Continued on page 106

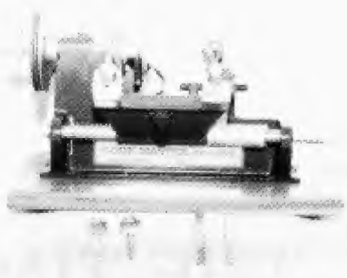
The Codemaster Conversion

"The Codemaster RJB 200 is a converted Belsaw 200 key machine. It has been converted from a duplicator to a full-blown, accurate code machine."

by Dale Libby

I have found an inexpensive code key machine and a great code key conversion kit that will allow you to cut accurate keys by code and depth and space measurements!

I knew that I would get some more use out of my Belsaw 200 key machine that I acquired many years ago when I took the Belsaw locksmith course. I took the course and was happy with it. Even though I was raised in a lock and key factory, I learned many things by taking the course that I use in every day locksmithing.



1. The Codemaster conversion of the Belsaw 200 key machine.

For the first part of the article, I will review the (converted) Codemaster key machine and then I will go through the conversion of my old #200 key machine.

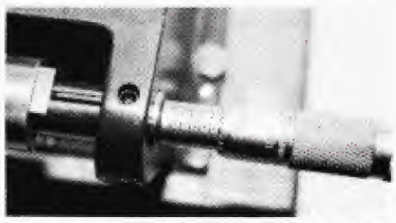
The Codemaster RJB 200 is a converted Belsaw 200 key machine. It has been converted from a Belsaw 200 duplicator to a full-blown accurate code key cutting machine. Photograph one shows the key machine. It is mounted on a piece of wood. I am not sure that this is part of the package or not. It is an exceptionally good job of mounting and finishing.

Photograph two shows the standard depth micrometer that is the hallmark of the Belsaw key machine. With this micrometer the depth of cutting a key

2. The depth micrometer on the #200 key duplicator code machine.

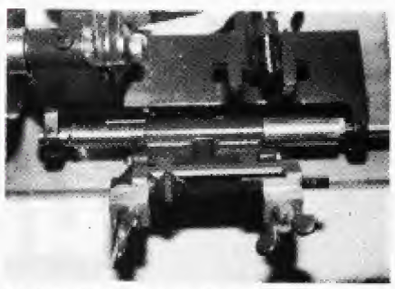
can be instantly changed and accurately adjusted for any duplicating problems, (i.e., worn or broken keys, or under-cut keys). The really innovative part of the key machine is the spacing micrometer. (*See photograph 3.*)

The carriage is forced into the spacer which hits the "T" bar which is what the inner micrometer shaft hits. This "T" bar can be seen in photograph three sitting in the horizontal cut out of the shaft across from the numbers on the micrometer. This micrometer can be adjusted for any convenient viewing angle.



3. The new spacing micrometer. Note the "T" bar which controls the spacing.

Photograph four shows the .375 spacing bar in the right carriage vice and a cut Schlage in the left carriage vise. This spacing bar (or the smaller one) must always be used when cutting keys by code. The two plates are stamped .375 and .310. For smaller keys, auto keys, padlock keys, and most wafer lock keys, the smaller plate is used. The larger plate is used for larger keys which include Ilco, Dexter, Kwikset, Schlage and Weiser.



4. Spacing bar used to gauge and cut a key.

To actually cut a key, at first I thought one would have to be an expert in mathematics, but the people at Key-Rite already have charts with the appropriate numbers. For instance, if you wanted to cut a 4 depth for a Kwikset lock, which is .259 inch, you would subtract .259 inch from the .375 plate, and set the depth micrometer at .116 inch. Sounds complicated, but it really is quite easy. All the depths and spacings have been worked out in advance in code sheets which are easy to use and understand.

The directions in the instruction book are easy to understand and there are ample illustrated directions. One of the interesting concepts of this code key cutting arrangement is that once the machine is in adjustment, it is in perfect adjustment for cutting all code keys and pattern keys. One does not have to change the cutter to cut Kwikset keys with a wide base or root cut, or those of General Motors which have very narrow root cuts. On some code key machines, the cutters must be changed when cutting keys with different root cuts.

This seemingly impossible feat is

accomplished by using a narrow "V" cutter and cutter duplicator vise. What you do is actually cut the root or base cut to whatever dimensions you desire by cutting through code. Again, this sounds hard, but it is easy.

Let us now cut two keys with only one cut apiece, so you can see what I am talking about. Lets cut a #3 depth in the third position on a General Motors key and on a Kwikset key: (The following information is obtained from the cutting charts which are included with the key machine and the conversion kit.)

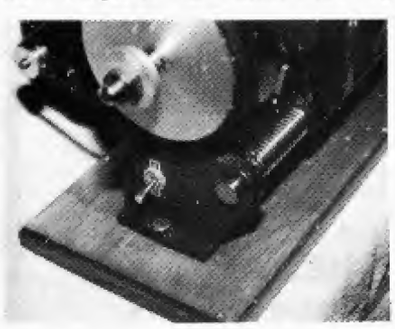
General Motors: Use the .310 plate. A number 3 space is exactly .293 from the shoulder of blank. General Motors uses a .40 wide pin seat, so you would start .020 lower and go .020 higher. You would set the micrometer at .273 and turn it to exactly .313. This gives you a .040 wide pin seat.

Kwikset Key: Use the .375 plate. A number 3 space is exactly .547 from the shoulder of the blank. Kwikset uses a .080 wide pin seat, so you would start .040 lower and go .040 higher. You would set the micrometer at exactly .518 and turn it to .568. This gives you a .080 wide pin seat.

Like I said, all the above information is available from the key charts. It would be easy to make up your own key charts for any keys or foreign keys you cut that possibly are not listed in the guide that comes with either the key machine or the conversion kit.

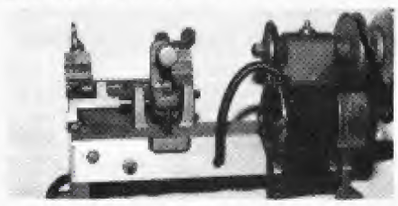
Once you get the hang of it, it is easy to cut keys by code, or even depth keys with this set-up. You are only limited by what keys you cannot get chucked into the vise correctly.

I did find one feature that I personally did not like about the code machine conversion. That was the placement of the on/off switch. It is located, as you can see in photograph five, just under the pulley on the left side of the machine. When the motor is off, then this is alright, but when it is running, it poses some danger to reach under a moving pulley to stop the key machine. We both mounted our motors similarly, however.



5. Placement of on/off switch under the pulley.

In photograph six is the back of my un-converted key machine. I have mounted a flat bar there with an on/off switch at the back of the machine. This is for safety and convenience. To the other end of the bar, I have mounted the motor, such that I can adjust it up and down easily. The machine belt I use to power pulley is a Singer sewing machine belt, which costs about $2.50 in most sewing stores. I always carry a couple of extras with me in case of breakage. My set-up and the Key-Rite conversion both make a nice compact versatile key machine.



6. New placement of the on/off button back of the machine.

Keymaster Conversion. If, like me, you have a Belsaw 200 key machine around, you can now use it for a versatile key code machine by purchasing a Codemaster Conversion Kit for about $100 from Key-Rite or their distributors. I actually tore down my Belsaw machine and converted it.

The directions say it should take about 10 minutes to accomplish the feat. It took me about 37 minutes. The problem was that the holes for the shaft were too small, and I had to use the

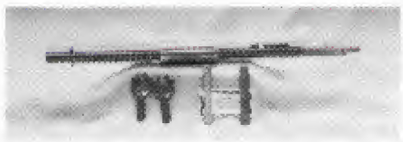
included hone to make them large enough to allow the shaft to slide freely and smoothly in the bearing case. Once this was accomplished, the conversion was quick and easy as the instructions stated.

Photograph seven shows the component parts of the conversion kit. It includes the following parts: the tension pin, the self-feed spring, the carriage, the "T" pin, and the .001 inch micrometer for accurate cut spacing. Also included in the kit is an allen wrench, two special .200 spacing keys, and the large and small spacing plates. A nice package with everything you need to accomplish the conversion of duplicator to code machine.

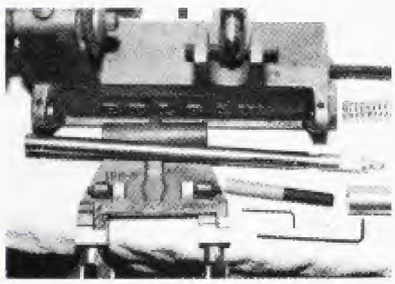
In photograph eight I have already taken apart my Belsaw 200 key machine in preparation for the installation of the kit. Just below the shaft with micrometer is a dark and light piece of wood. This is the hone that is included that really works. Just below that is the "T" bar.

By following the simple directions included with the kit, I was able to install the kit correctly the first time. After installation, the machine must be calibrated for the first time for proper space and depth adjustment.

The depth adjustment is accomplished by using conventional methods or by using the Key-Rite Electronic



7. The code machine conversion kit, including shaft, spring, spacer, micrometer, and space keys.



8. Belsaw 200 diassembled prior to installing the code kit.

Key Machine Adjuster or the listening method. The key machine must be zeroed out for proper code key cutting.

The spacing adjustment is accomplished by using the included space keys and shoulder gauges. The book explains it quite well. Here are a few tips to use when installing the conversion kit:

Make sure you adjust the space micrometer so you can easily read it. This can be done by inserting a tool and rotating the shaft so that the numbers are up. When installing the shaft, the tension pin hole can be used to help pull the shaft into proper alignment.

Both the depth and the spacing micrometers are adjusted the same way. The whole micrometer or micrometer and shaft are moved in and out, right or left, and then secured in perfect alignment with allen screws. The depth micrometer has only one screw, while the spacing micrometer is held in place by one allen screw at each end of the shaft.

Both the key machine and the conversion kit do fill an important niche in the code machine world. These are inexpensive alternatives to purchasing new code machines. These products do work. Granted, it is somewhat slow to cut a first key on this machine, but the key that it cut is an accurate key and will work well.

I plan to order a new cutter and guide for my machine and keep it in my truck for the summer, and get familiar with using it to cut my automobile keys by code. It will also be a useful machine to help prepare key blanks for impressioning, by pre-cutting or shimming the blanks at the proper pin positions. I am sure that I will find many uses for this conversion unit on my formerly seldom used Belsaw code key machine. I will let you know how this unit handles under actual working conditions in an upcoming *Shop Talk* column. ■

Electronic Locking, Part II

"It is good that the locksmith understand the power supply on the surface, knowing what it will do for the electric locking circuit."

by Allan Colombo

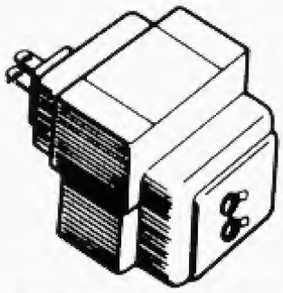
In the first installment of *Electronic Locking* in the April 1989 issue of *The National Locksmith*, various types of electric locking devices were discussed, as well as applications where they might be utilized. This segment will address the manner in which electric locks work, as well as some basic circuits used in conjunction with electric locking mechanisms.

Power Supply. The first link in the electric lock chain is that of the power supply. A power supply furnishes the electricity needed to power the electric lock, as well as those circuits to which it is attached. Some power supplies do nothing more than convert the 110 volts alternating current (AC) from the house electrical system, transforming it into a low voltage AC power source. Others perform an additional task. Besides lowering the 110 volts AC voltage, it converts the low voltage AC into a low voltage direct current (DC) source.

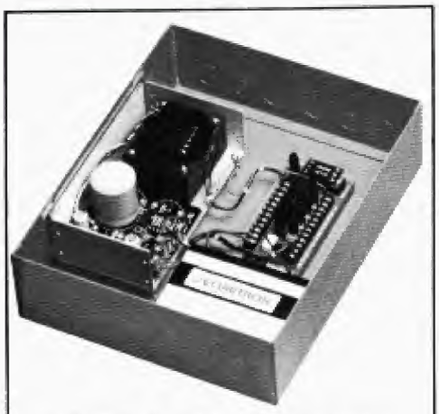
It is good that the locksmith understand the power supply on the surface, knowing what it will do for the electric locking circuit. Most suppliers, those who know how, will be glad to help with the decision of the proper power supply for the electric lock being purchased.

Illustration one features a simple power supply, capable of converting 110 volts AC into low voltage AC. Such a low voltage AC will usually be between 16 and 24 volts, and is commonly stated on the device itself. This particular model plugs into a standard wall socket, with the output voltage obtainable from the two screw terminals seen on the face of the unit. The technical name for this device is "transformer." Other models are available that wire directly into the high voltage side of the electrical system of the structure.

Sometimes the need for a source of battery backup power prompts the



The simple low voltage AC power supply. Illustration 1



The power supply with battery backup. Illustration 2

installer to purchase a more sophisticated power supply, also converting 110 volts AC into a low voltage DC. A rechargable battery is then attached to the power supply circuitry.

One such power supply is shown in illustration two. This type of power supply usually has an output that bares the label: (+) and (–). This simply indicates that a DC voltage is present; the polarity of which is as indicated.

Electric Lock Circuit Classifications. There are two basic electric circuits used in controlling access through any door electrically. The first is fail secure, and the second fail safe.

The first of the two categories, fail secure, involves the installation of an electric lock that, in its out-of-the-box state, is normally in a locked condition. With this electric lock installed in the jamb and no electricity furnished to its mechanism, the lock remains in a locked mode, until a voltage is provided to the wires leading to the innards of the mechanism.

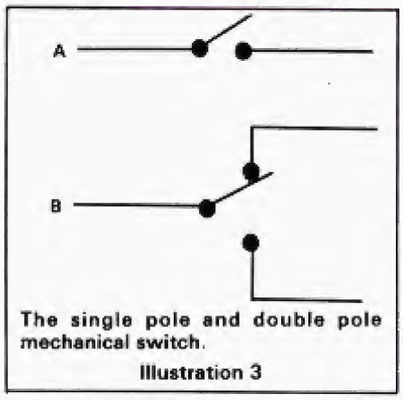
This type of device is termed an intermittent duty electric lock; intermittent because electricity is only intermittently furnished to the electric strike, and only when its to be unlocked or released.

The second class of electric locking circuit is that of fail safe. The fail safe lock requires a constant voltage be provided to its locking mechanism for this lock to remain in its locked state. In the absence of a supplied voltage, as is the case in its out-of-box state, this working mechanism remains unlocked.

This type of device is termed a continuous duty electric lock; continuous because electricity is continuously furnished for the assiduously locked condition the mechanism must remain in, for the door to remain locked.

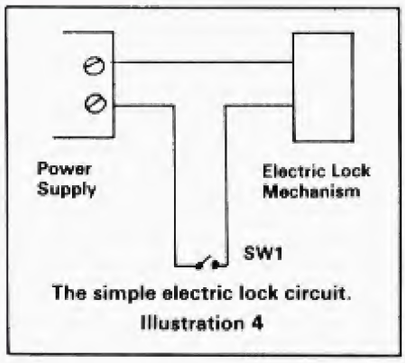
Switches. At the very heart of any controlled electric lock is the "switch." A switch, by its very name, indicates an act of change. A light switch changes the condition of the light to which its connected, turning it "on" or "off," by the flick of a switch. By the same token, the controlled electric lock requires the flip of a switch to activate or deactivate its mechanism, depending on the class of electric lock it is.

To better understand how this works, let's take a look at illustration three. In three (a) you'll note what is referred to



The single pole and double pole mechanical switch.

Illustration 3



The simple electric lock circuit.

Illustration 4

as a single pole single throw (SPST) switch. Basically, this means that a single center pole (contact) is used. This mechanism is switchable only in one way: "on" or "off." In three (b) you'll note the single pole double throw (SPDT) switch. Again, there is only one center pole, but, in this case, it can be switched between two other contacts, indicating it can be thrown two ways.

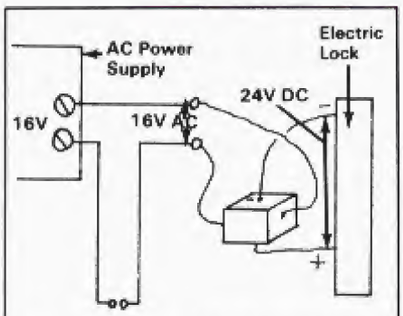
Armed with this simple explanation of what switches are and basically how they work, let's continue with our discussion of electric locks.

The Simple Electric Lock Circuit. A simple electric lock circuit might consist of a low voltage AC power supply, a manual pushbutton switch, and an electric lock, which can be of almost any variety. In illustration four, note that remote switch (SW1) is wired in such a way that, in its normal (open) position, electricity is denied the locking mechanism. When someone decides to unlock the door, they only need press the pushbutton. The two contacts of the switch are brought into contact with one another, providing an AC voltage to the locking mechanism.

The power supply, used in this example, could be of the low voltage DC variety as well. A battery could be used, in conjunction with the electric lock, to provide an uninterruptable source of power, even when the electric in the structure is severed in some manner.

Silent Operation vs. "The Buzz." A DC voltage supplied to the electric lock also allows the installer to provide for the silent mode of operation; where the typical buzz, encountered using AC, becomes annoying or undesirable. One of the characteristics of an AC voltage, on an electric lock, is its typical "buzz." There will be times when the user of the lock decides that this buzz is undesirable. In cases such as this, the installer has two options: to replace the low voltage AC power supply with that of the DC variety; or to insert another small device into the low voltage AC power supply circuit, already in place. This device is commonly referred to as a "rectifier." A rectifier simply converts the AC supply voltage to that of a DC.

The rectifier comes in a variety of shapes and sizes, differing from manufacturer to manufacturer. One version will utilize a small box with screw terminals, for easy connection of wiring; while another uses pigtail lead connections, as is the case in illustration five. You'll note that the DC portion of the rectifier is designated by either a (–) and/or a (+). The AC wires simply attach to the other two connections, usually unlabeled. Labeling usually isn't



The "rectifier" installed in the electric lock circuit.

Illustration 5

a problem, which makes connections simple and fast.

When converting an AC to a DC voltage, the installer should always make certain the electric locking mechanism can handle both the increase in voltage as well as the DC type voltage. This is easily accomplished by glancing at the label on the electric lock. Noting the designated voltages shown in illustration five, the locksmith will note that with an input of 16 v. (volts) AC, the output from a rectifier becomes approximately 23 to 24v. DC.

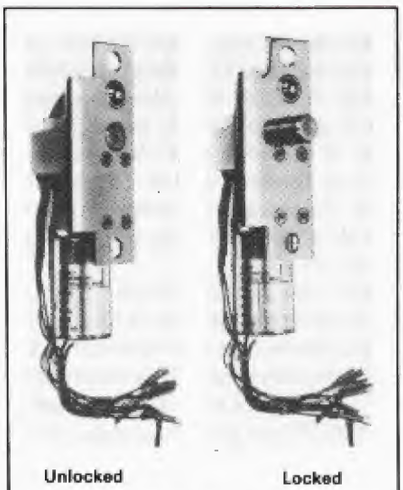
(For those of you who sport a volt meter, the output from a rectifier can easily be determined by measuring the AC voltage going into the rectifier, then multiplying that times 1.414. Without going into a lot of detail, suffice it to say that the rectifier's DC output voltage is always near the figure of 1.414 times the AC input voltage.)

Unrestricted Egress Systems. In apartment buildings and user controlled systems in offices, the unrestricted egress method serves the purpose well. The electric lock can be of the fail safe or secure variety, with the use of a knob and key lock that allows the exitee immediate unimpeded use of the door while exiting. In this system, the only time the electric lock is used is when the caller is allowed to enter. As mentioned in our last article, this can be through the use of an intercom, or it might be used in conjunction with a two-way glass, allowing the user inside to readily see and identify the caller, prior to opening the door with the electric lock.

The free egress system requires no additional inside or outside switching. The strike is of the usual safe or secure type, without any sensing switches built into the workings of the lock; however, some doors do not utilize knob and key locks. These installations require the use of egress and access control circuitry ("circuitry" is only a big word for "wiring").

Restricted Access/Egress Systems. In our last article, egress buttons and access key switch plates were briefly discussed. Egress buttons merely consist of a button on a plate, sometimes containing small lights (Light Emitting Diodes) that tell the status of the door. Access control equipment, of the key variety, usually utilizes a small key switch mechanism, or mortise locking switch mechanism, in addition to two lights that tell the person coming in what the status of the system is.

Many commercial installations utilize doors that merely have closers on them, with a handle from outside and a blank plate on the inside. Some of these will require inside egress switches, as well as outdoor access switches for incoming authorized traffic. The electric locks used on this type of installation usually correspond to the bolt type, pictured in illustration six. The same locking mechanism is shown in both right and left hand views; the unlocked mode on the left and the



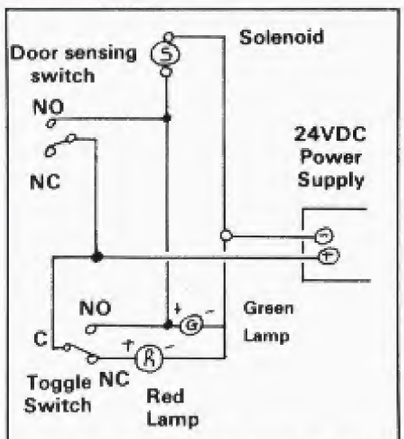
The electric bolt lock, unlocked and locked.

Illustration 6

locked mode on the right. A sensing switch can be seen above the bolt portion of the lock. This particular sensing switch is of the ball plunger variety, which is manufactured to roll on the edge of the door as it's being closed. Spring-loaded within the switch itself, the ball merely depresses an onboard switch mechanism whenever the door is closed.

The Fail Secure Circuit. The fail secure circuit is pictured in illustration seven. Please note that the negative (–) from the power supply connects with the solenoid (S) and the negatives of the red (R) and green (G) lamps. It will be the positive portion of the power supply that is switched "on" and "off."

First the nature of the fail secure mechanism is such that power is not furnished during stand-by. This is realized by following the positive portion of the power supply to the common (C) pole of the SPDT "toggle switch." Here the center pole is in its normally closed (NC) position, furnishing power to the red lamp. The red lamp indicates "the door is locked" and that entry or exit is impossible without initiating some sort of action. In the NC position, the solenoid (S) will not receive a positive voltage to energize the electric solenoid.



Fail secure electric locking circuit.
Illustration 7

The "toggle switch" can take the form of many things, such as a simple pushbutton, an actual toggle switch, a key switch, or a switch operated by a mortise lock cylinder. No matter what form the toggle switch takes, a switch is a switch.

Once the toggle switch is activated, placing the center common pole to the normally open (NO) side of the toggle switch, a positive voltage is immediately felt at the solenoid. Noting the toggle switch and the center wiper, the red lamp now has lost its positive voltage necessary for its illumination; and the green lamp has now connected with the positive voltage, indicating a "Go" condition.

In a case, such as that of the electric locking bolt mechanism, a means must be provided where the electricity to the solenoid can be maintained up until the time the door is re-closed. To do this, the "door sensing switch" is incorporated into the circuit. If you notice the normally open (NO) and common (C) center pole of the switch, they have been wired directly across the C and NO of the toggle switch, providing power to the solenoid until the door has physically been closed. At this time, the green lamp goes off and the red lamp comes on.

The Fail Safe Circuit. The fail safe circuit, shown in illustration eight, provides a constant source or power to the solenoid (S). This is accomplished by the interaction of first, the door sensing switch; and second, the toggle switch.

Continued on page 107

Computers and Masterkeying

"It is the computer's ability to handle the drudge work that accounts for its popularity and appeal in masterkeying. But there are several questions to answer."

by Don O'Shall

Let Mikey try it.

We have probably all laughed at the commercial that defers judgement to someone else, but when it's done in masterkeying it is no laughing matter. And that may become especially true when Mikey is a computer.

Computers offer a number of advantages to the professional locksmith, but they don't do everything well. For simple handling of data, such as customer lists, etc. the computer will, generally speaking, take longer to collect the information than it would take to collect it "by hand." In fact, collecting it by hand may simply be the first step in collecting it for entry into the computer.

On the other hand, sorting the information collected, such as selecting certain types of information for a particular purpose (for example, for a mailing to the customers in a particular group), can be done in only a small percentage of the time it would take to do manually. Similarly, extracting the information within it for preparation of reports, etc., is generally a simple and painless task by computer, saving you hours.

This is the first lesson to be learned about computers. They are *not* always time savers. They only become time savers if the uses that you put them to are uses that they *can* do well, and if you supply them with the necessary equipment and information to do that task to the best of its capabilities.

For drudge work, such as calculating the pinning requirements in a masterkey system, laying out the initial bitting charts for a masterkey system, maintaining key and cylinder usage records in institutional locksmithing, drawing graphs that show the relationship between various aspects of your business, or sorting information by some common trait, etc., the computer can be efficient.

It is the computer's ability to handle "drudge work" that accounts for its popularity and appeal in masterkeying. If you have ever spent four to six hours laying out a complete system of bittings by hand on blank charts, you can fully appreciate the kind of drudgery that is involved. And with program prices ranging from $25 to $400, it is easy to see that they can pay for themselves in time saved after only a job or two, without cutting into the profits very much in the meantime.

For the locksmith who may not be competent in masterkeying, the appeal is even greater. "Let the machine do the work. I'll pin the locks and collect the money."

There are several questions that should be asked regarding the program: Does the program separate the change keys into control groups? What kind? If it shows master keys of various levels, which levels are they? Can it handle different numbering systems? How well and how easily? And does it place irrational limitations on the masterkey or system that prevent it from being used with actual existing systems?

Also important is, does it give you any options regarding progression sequences, methods of masterkeying, or selection of an appropriate level of masterkey for the highest used by the system? Is it able to distinguish between acceptable and unacceptable bittings or pinning combinations such as those which violate the safety factor (MACS)? Many claim to, but in reality miss many of these combinations, while marking others, giving you a false sense of security about the usability of the

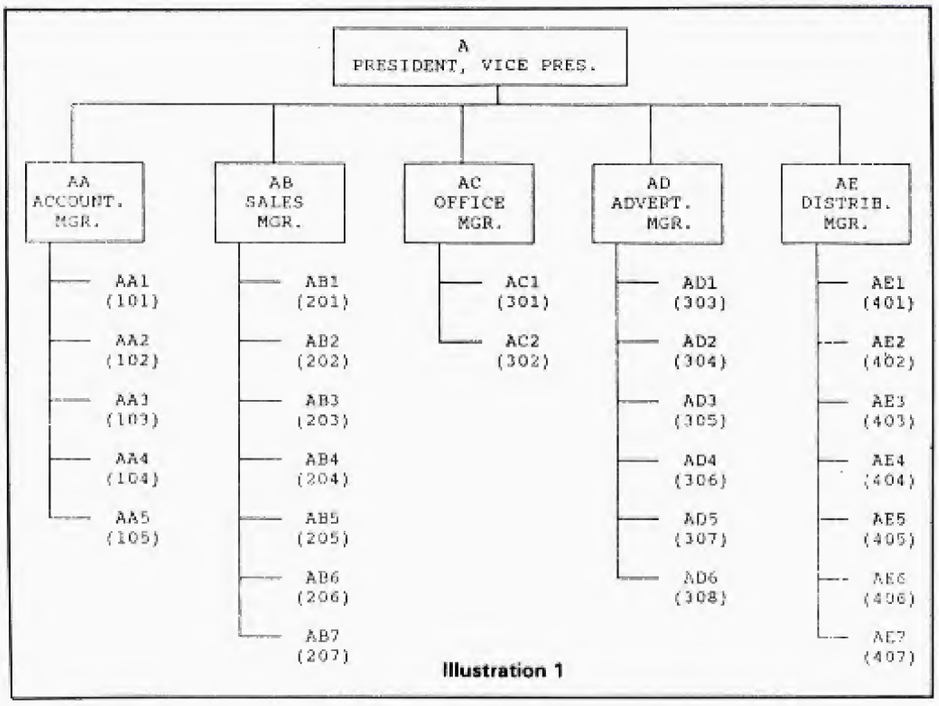


Illustration 1

system!

And finally, can you stand to use it, or does it accomplish (or make you accomplish) useless or counterproductive tasks to complicate your day without benefit?

A program can look ideal on the convention floor and do everything you could ever want it to and more, and still be unacceptable if you need to use it very often.

All of the points just mentioned show possible problem areas with computer-generated masterkey systems. Still, most rate moderately high. Regarding the change keys themselves (the individual operating keys for the system) nearly all are accurate using the simple progression (or total position progression) method.

Of course, only a very few can handle other methods, such as Hold & Vary, (and most of these are very limited on how far they can go with it). Few can even accept options regarding the progression sequence. Most offer a reasonable division of masterkey control groups. These, when shown, tend to be accurate also. Most also claim to mark or remove bittings that violate or exceed the safety factor (MACS), but few truly mark them all.

Few allow you to choose the appropriate level of masterkey for your highest master actually required by the system, especially for pinning combinations, and may waste time and paper by calculating for you how many pins of each length would be used if you were pinning exactly one lock cylinder to each and every bitting combination on the chart, which rarely is the case in actual systems.

Watching out for all of these potential problem areas can at least help you to select a program that will better suit your needs. But the real danger area lies with visual ID (alphanumeric labels to identify positions within the system).

Illustration 2

```
152106  SECTION MASTER _________
112106  GROUP MASTER ____A______
110106  PAGE MASTER ___________

          ******************** VERTICAL MASTERS ****************************
                    110306          110506          110706          XXXXXX
HORIZONTAL
  MASTERS
              AA1   110320          110520          110720          XXXXXX
110126                110322          110522    AA3   110722          XXXXXX
  AA          AA4   110324          110524          110724          XXXXXX
                    110328    AA2   110528    AA5   110728          XXXXXX


                    110340          110540    AD4   110740          XXXXXX
110146        AD5   110342    AD2   110542          110742          XXXXXX
  AD                110344    AD6   110544    AD1   110744          XXXXXX
              AD3   110348          110548          110748          XXXXXX


              AB4   110360          110560    AB6   110760          XXXXXX
110166                110362    AB3   110562          110762          XXXXXX
  AB          AB2   110364          110564          110764          XXXXXX
              AB7   110368    AB5   110568    AB1   110768          XXXXXX


                    XXXXXX          XXXXXX          XXXXXX          XXXXXX
110186        AE5   110382    AE1   110582    AE6   110782          XXXXXX
  AE          AE2   110384          110584    AE4   110784          XXXXXX
                    110388    AE7   110588    AE3   110788          XXXXXX
```

Some programs automatically assign these based on the bitting's position on the chart. That is *not* what visual ID should be applied to! Visual ID, together with the flow chart is to allow you to visually lay out the customer's needs in an organized manner, so that you can then select the best bittings to accomplish them. There is no *direct* relationship between them and the bitting chart.

This is one shortcoming of many masterkeying locksmiths. They can generate the bitting charts, or buy a program to do it, or even buy a set of pre-printed charts from another locksmith. But how do they apply it to *their* customer's needs?

Let's look at a relatively simple system, laid out using the principles of visual ID and the flow chart. (*See illustration 1, page 70.*)

Here we have a grand master key system with only five masters beneath it, each for a different department. With the exception of the advertising manager and the office manager (who share a floor), each department has its offices on a floor of its own. Each room has its own key for the persons assigned to it, and there is no over-lapping of authority. Each person works in one area only. The president and vice president can go everywhere in the system to oversee operations, of course.

Looks rather straightforward, doesn't it? Only 27 locks involved. Using only what has recently become known as "basic masterkeying" (simple or partial progression, with the assumption of ten possible depths of cut, and a safety factor of 7, this being the most common variation) it is easy to remember the "Rule of 4's:"

> A masterkey with only one cut in common with the theoretical master can operate up to 4 combinations; a masterkey with two cuts in common with the theoretical master key can operate up to 16 combinations; a masterkey with three cuts in common with the theoretical master can operate up to 64 combinations. A masterkey with four cuts in common with the theoretical master can operate up to 256 combinations, etc.

Since the 27 combinations our system requires is more that 16 and less than 64, it might seem logical that we need a masterkey for our A grand master that has three cuts in common with the theoretical master, in other words a page master. But this is not the case.

Instead, we need to first look at the lower levels of masterkeys where we see that the AA, AB, AD and AE masters all need to control more than 4 and less that 16. Therefore each needs to be a master with two cuts in common with the theoretical master. This means each is a column master (either horizontal or vertical, but all must be the same direction to avoid interchange).

But if we assign the first column to its column master as AA, for example, we must also reserve all the currently unused combinations that it *can* operate, which is the rest of that column. The same would hold true for AB, AD, and AE in our example. That means that the four column masters collectively control the entire page!

There are no bittings left for our small AC master and its two change key bittings. They *must* therefore come from a different page as our A grand master, becomes useless to us, since it cannot control the two additional combinations under the AC master. Instead the 4 page master (i.e., quad, base, group, or 4 pin master) will be the lowest master capable of operating the system.

Continued on page 108

Humor:

What's In A Name?

by Joseph Locke

I have a locksmith friend named Tom who is always ready to call me up and complain about what a rotten day he has had or how good it was. He has been a locksmith for a number of years and has seen just about everything, but even he has to wonder about these goofy car manufacturers and the different types of locks that are used on them.

"I can't believe it!" he bawled one day while I was vistiting his shop. "I get a package every week from my car lock distributor, and there are at least five new key blanks every week for the new cars coming out."

"That will keep the tow-truck people out of our pockets," I said.

"I don't know if it's worth it!" he moaned. "Look at the money we have to tie up hoping that the guy that bought one of the two Cadillac Allantes sold in this state loses his key close to my shop!"

"That is kind of ridiculous," I said.

"That isn't the worst of it," he sighed. "The names that the dealers come up with for these cars is enough to drive you nuts!"

"How come?" I asked.

"A guy called me up for a price on making a key for his car. I asked him what model of car it was. He said, 'It's a Monzda.' I asked him whether it was a foreign car or a domestic car and he said, 'How do I know. It's just a Monzda!'"

"I see what you mean," I said. "It's kind of tough to know which blanks to take!"

While I was at his shop he showed me a list of the types of cars that people have called about for quotes or making keys. These are actual names that have been given over the phone. Add to this the fact that many foreign students are driving on our campuses, and you have a real communication gap.

The list was as follows: A "Duce," which he though at first was short for Dussenberg, turned out to be a Buick Electra 225. A Fierza turned out to be a Fiero instead of a Firenza. A Capri was really a Caprice, and a Fiergo was really a Fuego.

(One day a fellow came in and told him that he knew why his car was called a "Saab." When asked why, he said that it was because he has been crying since the day he bought it.)

Then there was the fellow that wanted a key for his "Reliance," or the lady that wanted a quote on a Beret-talin". "Is that like Lorretta Lynn?" Tom asked.

There is the new "Hondai", and LaSable," and of course a "Camery."

We had thought it couldn't get any worse, and then the ultimate name for a car appeared this year...

The "Chrysler Jeep Eagle Renault Premier!" Wait until a guy just off the boat calls about *that* one! ■

Can You Top This?

"Twenty years in the business and I have never seen anything like this happen, but here it was in our shop. No one would believe this if I didn't take a picture."

by Jack Roberts

It was an early Tuesday morning and the stuff really hadn't started hitting the fan yet when the phone rang.

"Good morning, Locksmi..."

"You make car keys?"

"Yes Sir, we do, wha..."

"You make one for mine?"

"I'm sure we can, Sir, whe.."

"How much'll it be?"

"What kind of car is...?"

"Buick, how long'll it take?"

"Where is the car, Sir?"

"In my driveway."

"I see, and just where is the driveway, Sir."

"'long side my house. How much you charge?"

"Just exactly where is your house, Sir?"

"On Roe Street. How much?"

"At least sixty dollars, whi...?"

"I ain't payin' no sixty bucks. How 'bout borryin' your master key?"

"Sir, we don't have a master key, we..."

"Cain't you just put somethin' in there and wiggle it around?"

"No Sir, we don't do it the same as they do on TV, we ha..."

"Be cheaper if I bring it in?"

"Yes Sir, a lot cheaper, just bring it in and we will make..."

"How much?"

"About ten dollars I..."

"I'll do that, how late you open?"

"We close at five, Sir, but...?"

"'K, thanks."

I think that there are two kinds of lockshops. Those that have seen someone drag in an entire steering column, and those that will someday see someone drag in an entire steering column. It happens with us once or twice a year but that's probably our fault because we take a sort of sadistic approach to a phone call like the one just described. There is a certain amount of pleasure that can be derived from visualizing, occasionally through the day, the amount of work that is going on out there somewhere as a person wrestles with getting a lock out of a column, or a column out of a car.

1. Drilling for the side bar in the Buick steering column—attached to the dashboard.

Five o'clock rolled around, but nothing more was heard from our caller. Wednesday came and went, Thursday did the same, but Friday morning, early, we heard a commotion at the front door and looked to see two fellows carrying in, not a column, but the entire dashboard from a '68 Buick. I'm talking the *entire* thing, with heater hoses, wires and all the good stuff dangling out the back. To say that it was difficult to keep from laughing would be the understatement of the year!

Twenty years in this business and I have never seen anything like this happen, but here it was, in our shop.

"We finally got 'er out. Where you want it?"

Where *do* you put a Buick dashboard, anyway?

"Just lay it right here on the floor, Sir, and we..."

"How long's it gonna take?"

"Maybe half an hour, maybe longer."

I needed some time to document this occasion with photographs. No one would believe this if we didn't have pictures.

"OK, we'll be back, how much will it be?"

"Fifteen, maybe twenty."

"You said ten."

"Yes Sir, but you beat the lock up pretty bad."

"Yeah, we couldn't get 'er out, that's why we brought the whole thing. We'll be back."

As they went out the door I headed for the camera as Greg headed for the battery powered Makita. (*See photograph 1.*) I have seen some locks that have been beat on, hacked up, drilled, twisted and pried, but this has to take the prize. Fortunately we were able to hit the side bar with the first hole and the plug came out with just a bit of twisting and prying. We replaced the plug with an All Lock AK-1424, dug around in some old stuff until we found a decent looking bezel nut and the job was finished, except for one thing. Where do we put a Buick dashboard?

For the next few hours we must have moved that thing twenty times. Everywhere we put it, it was in the way. Finally, about three o'clock, one of the fellows came in.

"You get 'er fixed?"

"Yes Sir, it's ready to go."

"How much?"

"Twenty dollars, Sir."

"'be back. What time you close?"

"Five o'clock, Sir."

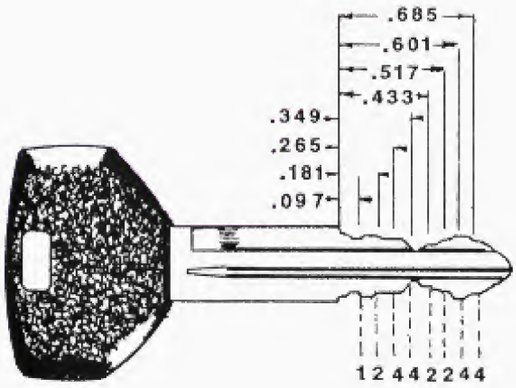
It was close to five o'clock and we had just about given up on seeing the men when the two of them came rushing in.

"We got the money."

And we took it! Not for drilling the plug, not for replacing it with a new one, but for moving that dang dashboard around all day long. But, that was just another day in the shop and our sadistic tendencies had been satisfied one more time as we wondered how long it would take to get that Buick put back together. ■

Mitsubishi Codes

E5001-7000



DEPTHS	
0 -	5 -
1 - 0.324	6 -
2 - 0.297	7 -
3 - 0.270	8 -
4 - 0.243	9 -

KEYWAYS	
HPC/ Silca	CY17P
Taylor	X174

Editor's Note: These codes will appear in the NFCB 1990 update. Code books from The National Locksmith *are the most complete system available. As an owner of our code books, you even get to use our free Code Hotline. See our ad on pages 55-58 for more information.*

E5001-7000 MITSUBISHI

Keyblanks:

HPC/Silca	MIT8
Taylor	X176
Curtis	MT-1

5001	5051	5101	5151	5201
01 33122122	51 33212113	01 32332344	51 33421234	01 22423442
02 21243311	52 0	02 0	52 31232344	02 0
03 21113422	53 33243431	03 34342111	53 0	03 0
04 13433112	54 0	04 23442322	54 0	04 21134324
05 0	55 33433224	05 32243242	55 31232344	05 23233111
06 22434434	56 32433121	06 21221243	56 0	06 0
07 21124334	57 24432111	07 32433312	57 13132121	07 32134233
08 0	58 33224433	08 0	58 21132443	08 21332244
09 24342124	59 32233321	09 11211323	59 0	09 32421134
10 0	60 33121332	10 32111322	60 0	10 33422112
11 0	61 33223211	11 33122121	61 11124243	11 31322334
12 0	62 0	12 33112422	62 0	12 23332123
13 0	63 13423421	13 31221134	63 31132424	13 23442321
14 33432434	64 32424333	14 22113334	64 31222112	14 11323321
15 22234321	65 0	15 0	65 0	15 33124443
16 31112224	66 0	16 21234243	66 21332344	16 32242112
17 0	67 0	17 0	67 12312343	17 11211244
18 32312324	68 0	18 31123133	68 31224422	18 0
19 13424334	69 21223211	19 22312231	69 12321134	19 12332243
20 11324321	70 23431243	20 12333242	70 32133244	20 0
21 32431232	71 22423424	21 31124334	71 12342321	21 31221242
22 32312433	72 33324244	22 23432133	72 0	22 0
23 32233443	73 31223433	23 0	73 21332132	23 11122123
24 21123221	74 0	24 0	74 32442423	24 0
25 0	75 33121124	25 0	75 0	25 0
26 0	76 33424213	26 0	76 0	26 0
27 32211213	77 33212231	27 32221323	77 31132334	27 21231342
28 0	78 21234311	28 11122434	78 11333122	28 12223131
29 32133221	79 0	29 22311342	79 12324331	29 32444324
30 21224442	80 0	30 23442124	80 21332113	30 31131224
31 22443121	81 0	31 12321332	81 32132332	31 0
32 21113221	82 31224423	32 31332211	82 22332332	32 0
33 0	83 32443122	33 11213232	83 32423134	33 32443343
34 0	84 11213423	34 0	84 21213344	34 0
35 11333243	85 22333111	35 0	85 23122112	35 31121231
36 34213112	86 0	36 0	86 0	36 32213132
37 0	87 13423434	37 21213311	87 32322444	37 32242431
38 32444212	88 12423423	38 0	88 0	38 0
39 12434213	89 0	39 23431121	89 22443224	39 31311221
40 12322434	90 0	40 12434423	90 31132444	40 0
41 11313244	91 0	41 31224432	91 0	41 21313322
42 0	92 21124322	42 22313444	92 0	42 0
43 12331344	93 12443432	43 31123444	93 0	43 23342431
44 0	94 32322312	44 24442124	94 33233424	44 13443321
45 31342442	95 13432431	45 12432342	95 33242244	45 32133432
46 31324224	96 12133222	46 22211311	96 0	46 0
47 0	97 0	47 32233123	97 23432443	47 21244221
48 32444331	98 31132432	48 0	98 12433433	48 0
49 0	99 0	49 23422331	99 0	49 0
50 32113242	00 0	50 23344231	00 32123123	50 11244223

E5001-7000 MITSUBISHI

Keyblanks:
HPC/Silca MIT8
Taylor X176
Curtis MT-1

5251	5301	5351	5401	5451
51 33131244	01 0	51 0	01 0	51 32431211
52 0	02 0	52 0	02 12443324	52 0
53 31324331	03 0	53 0	03 31222442	53 13423443
54 0	04 21344432	54 0	04 0	54 32131224
55 31121243	05 11133344	55 11312321	05 32332431	55 33122334
56 32443113	06 21321244	56 0	06 22424323	56 12432443
57 0	07 12324343	57 22332233	07 31113223	57 0
58 11124332	08 33224231	58 11222133	08 13342131	58 11134434
59 11324443	09 0	59 0	09 21113321	59 13432242
60 0	10 11122433	60 21111231	10 0	60 11222133
61 33312122	11 31324431	61 21221111	11 0	61 31312343
62 33112343	12 12342122	62 33213424	12 32312242	62 0
63 33123221	13 0	63 11312244	13 33124223	63 22312432
64 0	14 0	64 0	14 0	64 31321134
65 0	15 0	65 24342221	15 23243122	65 0
66 32234311	16 31334434	66 33124311	16 32342322	66 0
67 0	17 12432434	67 22133221	17 12444213	67 21211313
68 11123213	18 12322123	68 33321132	18 22122443	68 31124342
69 0	19 0	69 0	19 0	69 33224221
70 33212242	20 0	70 21344222	20 21231134	70 33443224
71 0	21 0	71 22423124	21 31212442	71 31322321
72 12444234	22 0	72 33124312	22 32122434	72 22113232
73 0	23 0	73 12322131	23 32431132	73 0
74 22332433	24 0	74 12231132	24 33122443	74 0
75 0	25 21324421	75 0	25 12234332	75 0
76 0	26 32112424	76 33124233	26 21342332	76 13342431
77 0	27 12333112	77 0	27 21342343	77 11233421
78 13432121	28 21323313	78 0	28 32223431	78 33243211
79 0	29 22422134	79 0	29 32211323	79 12432422
80 13434232	30 23423324	80 12342324	30 31342433	80 0
81 22422313	31 0	81 0	31 0	81 32112421
82 33134232	32 11221124	82 11234231	32 11212244	82 0
83 33134213	33 0	83 0	33 0	83 31211344
84 0	34 0	84 23322323	34 0	84 33421332
85 23434423	35 13421332	85 31244433	35 32123442	85 31243344
86 12334431	36 23423131	86 31332112	36 0	86 0
87 0	37 0	87 0	37 22432244	87 0
88 23421324	38 31223444	88 22443443	38 0	88 31122132
89 12311321	39 21223424	89 33224344	39 22431134	89 13421342
90 33231243	40 22421121	90 32434232	40 0	90 0
91 31242234	41 33132224	91 0	41 0	91 23444221
92 0	42 0	92 21231124	42 31133224	92 0
93 0	43 13342224	93 33112331	43 11221234	93 31324243
94 0	44 0	94 32232131	44 31232211	94 0
95 0	45 22131242	95 0	45 13432423	95 0
96 21333121	46 32423112	96 31132433	46 0	96 0
97 21313242	47 23421134	97 12442342	47 32312212	97 0
98 0	48 0	98 32232431	48 0	98 11243112
99 31322134	49 21122442	99 23342132	49 0	99 21243132
00 21233244	50 33444324	00 0	50 0	00 0

E5001-7000 MITSUBISHI

Keyblanks:
HPC/Silca MIT8
Taylor X176
Curtis MT-1

5501	5551	5601	5651	5701
01 22423131	51 22443132	01 33433242	51 0	01 11323421
02 12311124	52 11213231	02 0	52 31221311	02 33432444
03 32122323	53 22132134	03 32234331	53 0	03 32224434
04 0	54 32324421	04 0	54 0	04 0
05 11123122	55 0	05 33211323	55 33244331	05 12442224
06 0	56 12433444	06 21323322	56 31224343	06 22443112
07 22123432	57 0	07 0	57 23423443	07 0
08 0	58 22124423	08 32434321	58 23423111	08 0
09 0	59 22132424	09 11124244	59 0	09 0
10 32123332	60 0	10 0	60 0	10 0
11 0	61 13432124	11 0	61 32433431	11 32442322
12 21223112	62 21112421	12 11221213	62 0	12 33442323
13 0	63 13424432	13 21124221	63 0	13 0
14 23442313	64 33421213	14 21221332	64 13342124	14 0
15 21332211	65 0	15 12311132	65 34243111	15 33432234
16 21133122	66 32122443	16 13342323	66 0	16 0
17 0	67 0	17 0	67 34423111	17 32332421
18 23223112	68 21323443	18 33222133	68 11123234	18 0
19 33224321	69 32424431	19 33121131	69 21123434	19 12433131
20 31133423	70 0	20 31334212	70 21332331	20 32342421
21 11212442	71 0	21 31134311	71 31222331	21 23422124
22 12233442	72 32234232	22 32112313	72 12444233	22 22113323
23 12433233	73 0	23 11313421	73 32423431	23 0
24 0	74 0	24 33222131	74 32332311	24 11222112
25 22442421	75 22124431	25 21334244	75 0	25 34322111
26 31243422	76 22431231	26 21334213	76 0	26 22313243
27 21244242	77 0	27 11123331	77 31223432	27 0
28 0	78 21123424	28 32344222	78 21123223	28 0
29 0	79 21334434	29 13442422	79 11213234	29 32312332
30 0	80 0	30 33322123	80 31334311	30 0
31 31221213	81 0	31 32223424	81 12442122	31 0
32 13423221	82 31244213	32 0	82 22333113	32 0
33 22331131	83 0	33 11222131	83 22113313	33 23344432
34 0	84 0	34 33242342	84 0	34 33221331
35 0	85 32442421	35 21321332	85 32134223	35 0
36 11332244	86 33232212	36 0	86 22431342	36 0
37 12433124	87 31231124	37 11313444	87 12333111	37 0
38 21334432	88 31133312	38 0	88 22131124	38 11332213
39 31121132	89 11323423	39 12313123	89 23344342	39 0
40 0	90 31134234	40 31321224	90 0	40 22332133
41 32223443	91 22234332	41 0	91 0	41 0
42 0	92 22121323	42 32134244	92 32231242	42 32231132
43 0	93 21133433	43 0	93 12433133	43 22124311
44 24432423	94 0	44 13122112	94 11123424	44 31112332
45 32124421	95 33224334	45 31233231	95 23444323	45 0
46 32134231	96 32311232	46 0	96 23334442	46 22133224
47 31112231	97 34344222	47 33243212	97 11133432	47 31113424
48 0	98 21312212	48 31243442	98 0	48 0
49 0	99 21123211	49 24322321	99 0	49 13422422
50 0	00 21231231	50 22131322	00 21132432	50 11134243

E5001-7000 MITSUBISHI

Keyblanks:
HPC/Silca MIT8
Taylor X176
Curtis MT-1

5751	5801	5851	5901	5951
51 31134233	01 31322211	51 31134232	01 22443432	51 0
52 0	02 33243422	52 31211212	02 32321124	52 21123244
53 31243131	03 33424223	53 32123433	03 33232432	53 0
54 21123312	04 11332331	54 11324243	04 32133423	54 22434423
55 31244321	05 23422133	55 32122111	05 0	55 32312443
56 32322311	06 24233111	56 13433124	06 32312124	56 13421324
57 11124224	07 11134424	57 0	07 21344421	57 13421324
58 0	08 33223311	58 21132243	08 0	58 33121132
59 0	09 11332132	59 21243423	09 12432432	59 12442221
60 33124321	10 0	60 21133224	10 21322434	60 0
61 21323343	11 12231331	61 33124213	11 32134242	61 33242131
62 12312424	12 33223224	62 0	12 0	62 0
63 31242244	13 0	63 31132422	13 22234443	63 31122123
64 33224332	14 0	64 0	14 0	64 33433111
65 33231134	15 12443113	65 11134432	15 0	65 33242211
66 33223123	16 22132234	66 0	16 32422323	66 0
67 32311212	17 13334223	67 33234232	17 31113331	67 0
68 21344213	18 33212431	68 31223134	18 32422334	68 0
69 12231121	19 23113122	69 31131344	19 32212344	69 0
70 12344342	20 0	70 0	20 21124231	70 33442242
71 0	21 12422313	71 0	21 31231132	71 21324434
72 21223133	22 33113211	72 33443442	22 12433431	72 21224431
73 31234243	23 23434224	73 32334321	23 0	73 32432422
74 0	24 33123122	74 32213223	24 31231234	74 31311212
75 21213213	25 33122244	75 0	25 0	75 22134231
76 0	26 0	76 11213434	26 12231231	76 21331211
77 33122323	27 32322121	77 13444324	27 13423431	77 21134424
78 33123344	28 33223113	78 0	28 33113213	78 0
79 21112213	29 0	79 0	29 23443111	79 31213322
80 0	30 21213224	80 11124443	30 0	80 33123422
81 21213331	31 22424321	81 33113424	31 32123133	81 33423324
82 0	32 0	82 13232112	32 31213323	82 0
83 31223423	33 0	83 21334424	33 0	83 11221344
84 0	34 21223343	84 21334442	34 13422231	84 13431244
85 0	35 31223224	85 22121321	35 0	85 31123332
86 32242234	36 0	86 12432231	36 22121132	86 0
87 12423422	37 23334224	87 32132421	37 0	87 33112312
88 0	38 33123131	88 33312324	38 0	88 32134431
89 13433222	39 31311344	89 21323444	39 0	89 31243213
90 22123343	40 31311243	90 32212432	40 21122121	90 22213324
91 33234243	41 11244222	91 0	41 12342331	91 0
92 33212443	42 21112431	92 22222342	42 31224321	92 0
93 22442432	43 33243432	93 33224343	43 0	93 21323122
94 33423344	44 32212234	94 0	44 0	94 32134334
95 32312234	45 22324332	95 0	45 32311231	95 0
96 0	46 0	96 32422432	46 13442133	96 34243222
97 21332221	47 12233123	97 22421332	47 32422123	97 33134421
98 22332344	48 32432244	98 0	48 21122434	98 13421331
99 31221343	49 21331224	99 0	49 0	99 33442131
00 0	50 21243421	00 0	50 11221342	00 31342242

E5001-7000 MITSUBISHI

Keyblanks:
HPC/Silca MIT8
Taylor X176
Curtis MT-1

6001	6051	6101	6151	6201
01 31132244	51 32312244	01 11313423	51 33134224	01 12434431
02 31113233	52 0	02 0	52 0	02 31222134
03 0	53 21342431	03 0	53 0	03 32442312
04 0	54 22211312	04 33244433	54 33421231	04 13424223
05 0	55 12234434	05 0	55 31224342	05 0
06 31243111	56 0	06 12313442	56 31224221	06 33311224
07 33444232	57 32331224	07 0	57 21334443	07 33311132
08 22444234	58 31222344	08 0	58 11213323	08 22213123
09 31342132	59 33222442	09 21324432	59 33442234	09 0
10 0	60 33423111	10 0	60 23443133	10 0
11 11221231	61 32244313	11 21133242	61 31233124	11 0
12 0	62 22442133	12 23122123	62 33243131	12 32232231
13 0	63 32211313	13 0	63 24342321	13 23433213
14 21112342	64 22213431	14 11333113	64 22113122	14 21213211
15 21221121	65 21124331	15 32112122	65 0	15 32213212
16 24342323	66 12133112	16 23421131	66 21121244	16 32243433
17 31213223	67 13423332	17 13443224	67 23443223	17 33224244
18 22211132	68 21133444	18 33432431	68 0	18 33322112
19 0	69 12331234	19 0	69 12444224	19 0
20 0	70 0	20 32331234	70 31342232	20 32312113
21 0	71 0	21 33122432	71 0	21 31233111
22 12422443	72 13423313	22 0	72 33322113	22 0
23 33111242	73 0	23 0	73 33244213	23 0
24 0	74 11323124	24 0	74 23421221	24 32322431
25 23432244	75 0	25 33232213	75 22323124	25 0
26 32322324	76 33422323	26 12312442	76 33211213	26 0
27 11332433	77 21343212	27 0	77 32243343	27 32212434
28 21344422	78 0	28 0	78 0	28 21122123
29 23421224	79 0	29 0	79 31331224	29 33132243
30 32122343	80 34312122	30 22334331	80 21331234	30 13432443
31 32123421	81 22113242	31 12331224	81 0	31 21311344
32 0	82 0	32 0	82 22233342	32 0
33 32223331	83 11324221	33 0	83 32243432	33 31312224
34 32342311	84 32322131	34 0	84 0	34 31312224
35 33243344	85 0	35 31124433	85 32113423	35 0
36 12442243	86 22211324	36 0	86 0	36 21233311
37 0	87 21322244	37 12324322	87 0	37 0
38 33122311	88 0	38 12433243	88 0	38 31212444
39 0	89 11221224	39 31132122	89 0	39 33111332
40 33312421	90 0	40 23343342	90 0	40 32212334
41 0	91 24433112	41 0	91 23443123	41 0
42 31234212	92 0	42 0	92 33223324	42 0
43 32442313	93 0	43 32344213	93 32113224	43 31324343
44 0	94 31322332	44 21224331	94 0	44 31344342
45 0	95 0	45 11312443	95 11223243	45 0
46 13442321	96 11122432	46 0	96 0	46 33244313
47 12313224	97 0	47 0	97 22213134	47 31324323
48 0	98 0	48 0	98 0	48 32424334
49 22432331	99 32232433	49 13434231	99 31312244	49 0
50 0	00 33423321	50 31232442	00 12424432	50 22421313

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Keyblanks:
HPC/Silca MIT8
Taylor X176
Curtis MT-1

6501		6551		6601		6651		6701	
01	12223344	51	0	01	0	51	0	01	11222134
02	0	52	21342433	02	0	52	0	02	32121342
03	32131234	53	22421131	03	0	53	0	03	0
04	21213432	54	33222312	04	22324423	54	31311343	04	31224223
05	33123134	55	24342121	05	21123124	55	21322444	05	22121124
06	21211332	56	22423313	06	32221324	56	33444321	06	0
07	11332442	57	33433112	07	21121234	57	0	07	0
08	22332213	58	13422343	08	21323442	58	33443431	08	21342124
09	33113324	59	11213244	09	33111321	59	12442213	09	0
10	0	60	33221343	10	21311212	60	0	10	0
11	22444332	61	32224343	11	22433234	61	0	11	12323422
12	0	62	0	12	13443244	62	0	12	33424233
13	32244432	63	33132442	13	32332432	63	12244324	13	32112224
14	32424321	64	0	14	0	64	0	14	21244231
15	21213321	65	0	15	33134431	65	0	15	32132324
16	32134322	66	32433112	16	12443344	66	31331324	16	11233131
17	31243231	67	12332424	17	33133124	67	21313423	17	12323111
18	21323424	68	13312224	18	33322322	68	22311334	18	33422113
19	12434321	69	0	19	21244344	69	11322134	19	11223221
20	33244222	70	33322134	20	13212112	70	31334422	20	22311331
21	0	71	12322342	21	33443342	71	32211244	21	32213434
22	0	72	0	22	0	72	31132113	22	0
23	23422234	73	32324332	23	0	73	0	23	12344321
24	22321324	74	21334344	24	21233444	74	0	24	0
25	31112232	75	0	25	0	75	21342334	25	0
26	0	76	0	26	0	76	0	26	0
27	0	77	31243233	27	22124313	77	32442422	27	0
28	32211221	78	0	28	12333113	78	0	28	0
29	32311311	79	22213421	29	22111232	79	12432213	29	33424231
30	21124342	80	13433113	30	31312313	80	0	30	21233344
31	33442112	81	21123133	31	32212243	81	13434431	31	0
32	0	82	0	32	13433223	82	31123233	32	0
33	22424421	83	31112423	33	22134442	83	0	33	21211321
34	31221132	84	33211344	34	12442234	84	31133221	34	0
35	0	85	0	35	0	85	31342124	35	22133242
36	0	86	11323112	36	0	86	34213222	36	33112134
37	22122334	87	31332121	37	32242332	87	31223344	37	0
38	0	88	22332424	38	22332434	88	31122122	38	0
39	31134431	89	12422444	39	0	89	33312431	39	21133434
40	21213223	90	0	40	0	90	33324231	40	31133232
41	0	91	33423234	41	13133112	91	32112331	41	32324331
42	31112434	92	0	42	33442322	92	0	42	0
43	24342123	93	24343222	43	32123124	93	33124424	43	32132334
44	12333222	94	33223443	44	11211344	94	21243244	44	22243332
45	33421224	95	24442112	45	12423421	95	32334342	45	21344223
46	12243332	96	0	46	12331332	96	21233232	46	13433421
47	0	97	0	47	21231244	97	32122344	47	32422111
48	33121324	98	23442213	48	31231232	98	0	48	32132124
49	32344211	99	23423343	49	21133342	99	31242133	49	21213313
50	32212311	00	21234231	50	33322121	00	31232444	50	0

E5001-7000 MITSUBISHI

Keyblanks:
HPC/Silca MIT8
Taylor X176
Curtis MT-1

6251	6301	6351	6401	6451
51 0	01 33124244	51 32334224	01 33231212	51 0
52 0	02 12312334	52 12333243	02 21221211	52 32442134
53 21132433	03 0	53 21132112	03 32232132	53 32424332
54 32432432	04 13431224	54 33111323	04 0	54 31212311
55 21223423	05 22334332	55 0	05 0	55 31213313
56 21322112	06 31213344	56 32422344	06 21324424	56 31324332
57 22131244	07 31331231	57 31133231	07 32112113	57 21231213
58 33132424	08 32312243	58 33113231	08 0	58 32424434
59 11133132	09 21321243	59 21124213	09 32131331	59 0
60 0	10 0	60 32122311	10 12224344	60 0
61 0	11 32243243	61 0	11 0	61 0
62 0	12 0	62 0	12 32122321	62 0
63 12233424	13 11322343	63 31112443	13 12422324	63 21233321
64 0	14 0	64 21243213	14 32431243	64 33311324
65 21333221	15 32332434	65 11211343	15 0	65 22112444
66 22432321	16 12312321	66 24422424	16 33133244	66 13442442
67 0	17 0	67 21132124	17 0	67 32123113
68 0	18 31234344	68 21322334	18 0	68 0
69 12312243	19 0	69 21133132	19 23432234	69 0
70 32224342	20 33442332	70 0	20 13423213	70 22424434
71 21234213	21 21243223	71 32213334	21 11211332	71 32443312
72 22434234	22 21223321	72 32123112	22 11122132	72 0
73 22134331	23 11312324	73 0	23 0	73 22444334
74 11324442	24 0	74 31322423	24 22343112	74 31344212
75 0	25 31342313	75 23422321	25 12423431	75 31321334
76 32123424	26 22332132	76 33213223	26 32122134	76 0
77 21321231	27 22312421	77 13433221	27 0	77 22133131
78 32232134	28 0	78 0	28 0	78 0
79 31113444	29 0	79 0	29 22133234	79 32133421
80 0	30 13342123	80 21312332	30 12323344	80 24422123
81 0	31 13422443	81 32332134	31 21124421	81 32342443
82 31224233	32 0	82 33434434	32 22431224	82 11311343
83 12313213	33 33133424	83 32344224	33 21323113	83 33113223
84 31112312	34 0	84 11233112	34 11134222	84 21313213
85 31234231	35 33112211	85 22213133	35 0	85 33322432
86 23132111	36 32331311	86 21112244	36 31324313	86 0
87 12324431	37 0	87 0	37 12224342	87 0
88 22133233	38 31223331	88 0	38 0	88 33232242
89 33242213	39 32443233	89 0	39 31134321	89 12343321
90 11123324	40 21332231	90 0	40 0	90 12313421
91 33131231	41 32233444	91 22132213	41 0	91 11221321
92 31233232	42 0	92 22211344	42 0	92 22432124
93 21113242	43 12313223	93 22111234	43 23113112	93 22213243
94 31244212	44 32234221	94 22331342	44 0	94 32111344
95 32331231	45 32134321	95 0	45 11213424	95 0
96 0	46 11124344	96 12422321	46 31243342	96 33212132
97 0	47 21334243	97 33424332	47 32243321	97 31311323
98 32331121	48 12342423	98 22134312	48 0	98 0
99 0	49 12243131	99 31222312	49 23443213	99 13443423
00 22132131	50 12312323	00 33134212	50 21133431	00 13334222

E5001-7000 MITSUBISHI

Keyblanks:
HPC/Silca MIT8
Taylor X176
Curtis MT-1

6751	6801	6851	6901	6951
51 12433134	01 0	51 12223124	01 32442111	51 0
52 33111324	02 23424434	52 33222431	02 13424213	52 32424324
53 0	03 24442111	53 12311334	03 0	53 0
54 33432111	04 0	54 13112224	04 0	54 32443321
55 22423342	05 21221132	55 0	05 0	55 0
56 11122444	06 0	56 0	06 21331324	56 12212112
57 31342134	07 22132312	57 12334231	07 12431132	57 23442112
58 0	08 33422134	58 0	08 21243432	58 0
59 32342342	09 0	59 0	09 22243111	59 22132442
60 22433444	10 33231244	60 0	10 32234421	60 21243231
61 11224213	11 0	61 32134423	11 0	61 24342224
62 23334431	12 33224233	62 0	12 31123112	62 0
63 32132211	13 21243343	63 0	13 22233123	63 0
64 11133122	14 21331322	64 33312444	14 0	64 0
65 0	15 22243432	65 11134344	15 32224423	65 12433321
66 12442343	16 13244222	66 0	16 0	66 34334222
67 0	17 0	67 0	17 0	67 32442334
68 12113222	18 12442321	68 31124421	18 31233342	68 21343322
69 12423122	19 0	69 0	19 33443122	69 31332324
70 22111324	20 13423343	70 12234233	20 22113243	70 33312234
71 0	21 31242132	71 31222444	21 0	71 12443122
72 13133222	22 0	72 21211221	22 13434434	72 0
73 22133324	23 11213331	73 31132123	23 32433242	73 23342324
74 31244334	24 0	74 22131132	24 31233134	74 32431324
75 11313443	25 0	75 12324313	25 32444211	75 0
76 0	26 13342242	76 0	26 12233122	76 0
77 33434424	27 22432344	77 33131121	27 0	77 23112122
78 0	28 22311332	78 0	28 33112322	78 0
79 31113224	29 33243443	79 12432332	29 0	79 0
80 0	30 0	80 0	30 0	80 21331242
81 21132312	31 0	81 0	31 0	81 21124312
82 32134443	32 0	82 0	32 0	82 31221321
83 33321243	33 21333224	83 21322344	33 21211331	83 13343111
84 32212211	34 33134443	84 22134322	34 21223323	84 33424423
85 24312421	35 33423243	85 0	35 11221331	85 0
86 12223113	36 12423442	86 21234322	36 0	86 21233434
87 0	37 23442334	87 31311332	37 13433244	87 23342123
88 21243112	38 12324333	88 31221124	38 21342123	88 21343124
89 32113332	39 0	89 12324433	39 31132213	89 34332123
90 0	40 32342113	90 12442121	40 0	90 0
91 0	41 13344331	91 22442431	41 21121343	91 21322424
92 32433231	42 0	92 12434434	42 0	92 22423334
93 31334242	43 13343421	93 31231322	43 24332221	93 33324342
94 31311244	44 32444322	94 0	44 0	94 21134212
95 12421324	45 24432321	95 21224321	45 32442242	95 13422121
96 33221211	46 0	96 11322431	46 33224323	96 13424234
97 31124234	47 11124231	97 13444323	47 22133342	97 31342431
98 0	48 0	98 13423344	48 0	98 0
99 31243431	49 21122133	99 31123423	49 23432424	99 0
00 11223121	50 0	00 22122344	50 33243122	00 13222111

Shop Talk

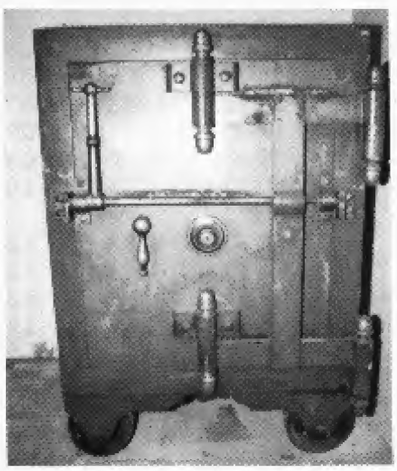
Helpful Questions and Answers

Written by *all* of the following authors: Robert Sieveking, Dave McOmie, Don O'Shall, Jack Roberts, Dale Libby and Shirl Schamp.

Send your locksmith questions, along with a self-addressed stamped envelope to: Shop Talk, *The National Locksmith*, 1533 Burgundy Pkwy., Streamwood, IL 60107.

Q: I have recently come into possesion of this B.U.M. (Big Ugly Monster, (see photograph 1), *and thought I would write to see if you can give me some information on it.*

As you can probably tell, it is a McNeil and Urban, which I got from a drug store in Oregon, IL, and intend to use it to store records and master keys from some area customers I service. Would it be classified as a jeweler's safe, money safe, paper weight or what? Does it offer fire protection?



1. McNeil and Urban safe.

I notice no relockers, as the front handle is free spinning when locked. Are they necessary? There are six empty threaded bolt holes above the lock case on the inside. Were these for a time lock or something else? With the alphabet dial, is there a "forbidden zone?"

I have enclosed a self addressed, stamped envelope and would really appreciate any information that you could give me.

Paul Shriber
Illinois

A: This unit is definitely *not* a safe or fire safe. It gives virtually no fire protection at all, aside from what any big steel box would in a hot fire. It would probably act as an incinerator more than a fire safe.

This unit was most likely used in a bank or savings and loan institution. It might have been put inside a vault also. The time frame we are talking about is from approximately 1880 to 1912. This was a good unit for the day, but with the invention of oxy-acetylene torch cutting, the real protection was lost for valuable storage, at least from a banking standpoint.

There are no relockers on this unit, because it would be next to impossible to punch it. The dial spindle is absolutely punch-proof and tapered to boot. It would be like trying to hammer a 1" bolt into a ¼" hole. It just can't be done. Also, there are several hardened steel plates that are incredibly hard to drill through protecting the inner mechanism.

As you stated in your letter, the handle is free-spinning until the correct combination is dialed. If you were to disassemble the handle mechanism, you would see that the handle spindle is also punch-proof.

Both the inner and outer doors on this unit have a compressor style bolt system. (*See photographs 2 & 3*). This is to assure that the doors fit tightly, to allow the proper working of the lock and locking bolts. It is also to assure a very tight fit, to make it difficult to "soup" the safes (chests) with nitroglycerine or other explosives.

The six empty (individually) threaded holes above the lock are for a two or three movement time clock. I have not seen this configuration exactly, but most money safes of this type did incorporate some type of time clock movement as a means of overnight protection for the bank's money.

If it is exactly like the lock I am familiar with it has four wheels and a like sized fifth drive wheel. There is *no* forbidden zone, as such, but the drive wheel on the locks that I have worked on is always set on the letter "E." On fire safes, the locks used were in an "open cluster" arrangement, and the last number or letter was always a "K." Basically, if you can get the lock to work more than once on a combination, then there is no problem with the forbidden zone.

The forbidden zone is quite misunderstood. Putting the last number of a combination will most likely cause a "lock-in" and not a lock out. A lock-in

2. Inside the bank safe door...

3....on both sides.

is a condition where once the lock is dialed open, the dial cannot be turned to lock the combination lock because of the position of the last number of the combination. If the combination lock works on this old unit, and it is easy to lock and unlock the combination lock, then it is alright.

I would make the last letter of this combination at least three letters away from "E" (if that is what the drive wheel is set on) to assure proper movement of enough distance of the drive wheel when it engages the nose of the lever. What is more important than the last letter of the combination in this lock is to have the directional-rotational sequence of the wheels.

The last turn on your lock should be RIGHT TO STOP. I do not know if your drive wheel was movable/double, or a single wheel, but the rotations must be worked backwards so that the last turn is right to the drop-in position (which will probably be "E"), stopping on "A" or "B" with the continued

rotation of the dial while it is pulling back the bolt to engage the free-spinning handle mechanism.

Most locks of this type would be combinated:

Turn 5 times right to: _____
Turn 4 times left to: _____
Turn 3 times right to: _____
Turn 2 times left to: _____
Turn 1 time right to: STOP
and turn handle to open!

You have quite a formidable chest here, and it should serve well as storage for master keys and anything else valuable. Keep it lubricated and it should work well for many more years. Do not get too discouraged if you try to take the unit completely apart. It was not made to be completely disassembled, for many parts are behind plates that are screwed together and cannot be easily disassembled to work on.

The nice thing about the lock is that all the parts, the wheels, the spacers, and all the combination parts are numbered with stamped in numbers that are put in numerical sequence of the proper way the lock is to be reassembled. Part one is the first part to be put back in, up to and including the following 18 or so parts.

The locks on these units are beautiful in intricate detail, and it is a shame that only the service person or technician can enjoy the beauty of the scroll-work and engravings that these locks provide.

I hope that this answers your questions. *07*

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I would like to thank Robert Sieveking for the information about Pundra file cabinet locks in the October 1988 issue of The National Locksmith.

I have determined the cuts for four different codes. They are as follows:

CODE	SHOULDER SIDE	PLAIN SIDE
S18	1515	1315
S23	5111	5313
S33	1551	3353
S42	1511	5313

Emerit Thompson, Jr.
Minnesota

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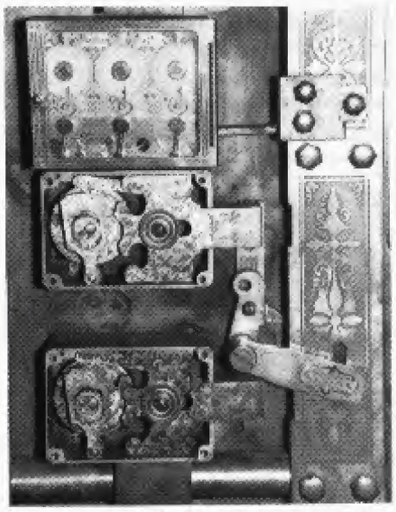

13. Close-up of the dual combination locks and three movement timelock.

style linkage attached to the lockbolts. As I said earlier, these are direct-drive locks. Can this be determined from the outside? Not by physical characteristics; but the dials have a different feel and sound to them than the geared ones do. With a listening device the difference becomes as obvious as that between a 6730 and an OC5.

In conclusion I must confess to you that I have no conclusion. McOmie's rule works like a charm on Diebold jeweler's chests, but it is almost not worth trying on a Banker's safe. After determining there is a geartrain, the $64,000 questions becomes, which way is the darn thing pointing? In the absence of luck, an exploratory hole seems inevitable. And in this eventually, a flexible fiberscope is worth its weight in gold, and no, mine is not for sale! ■

Letters

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Technitips

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because of a sagging door or too much weather stripping around the door margin. After applying too much torque too many times, the acutator gives up. The door is locked, the cylinder spins freely and the bolt cannot be retracted. My method of opening the door is faster and easier than drilling for the attachment screws to remove the lock.

Insert the key into the lock, turn the plug and break the key off flush with the face of the plug. Drill an ⅛" hole in the face of the plug as shown in illustration eight. Use a GM lock puller, nose

Illustration 8

puller or slide hammer to pull the plug from the lock cylinder. This breaks the retaining clip at the rear of the cylinder. With the plug removed, it is a simple matter to retract the lock bolt. This method requires only one ⅛" hole and takes about five minutes.

McConnell
California

Editor's Note: To avoid drill breakage, drill beside the keyway. This will avoid drilling through the lock pins.

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Mortise Lock Service

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Waldes ring and exchanging the rosettes. (*See photograph 7.*)

7. Waldes ring removed and rosettes exchanged.

Although mortise lockset service follows a pretty set pattern, the main purpose of this article is to advise that any all-steel mortise lockset should be examined carefully for warning or

caution notices before attempting disassembly. Take a close look at photograph four and note the distance of compression that must be applied to the hub springs to get them behind the retainer pin.

If a notice is on the case, believe it! ■

Electric Locking

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Looking at illustration eight, the positive power supply terminal is wired in such a fashion that it first must traverse through the door sensing switch, traveling first to the common (C) pole, through the wiper of the switch to the normally closed contact (NC), and on to the toggle switch. Entering the common pole of this switch, it then connects with the NC contact and onward to the solenoid.

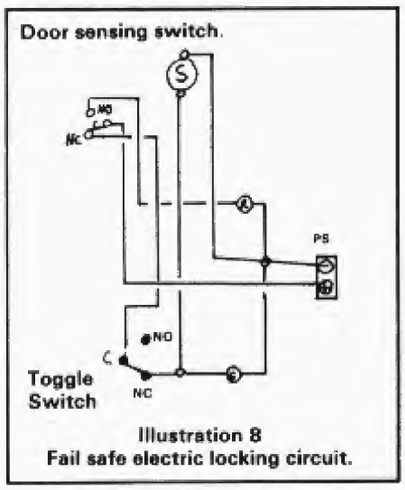

Illustration 8
Fail safe electric locking circuit.

As long as the door remains closed and the toggle switch remains in its stand-by position, everything is fine and dandy. However, when the toggle switch is activated, switching the common (C) pole to the normally open (NO) pole, power is disrupted. Once the door is opened, the toggle switch can (and will) return to its normally closed status.

However, the door sensing switch has also disconnected power from reaching the solenoid, detecting an opened door. Although the toggle switch may be restored, the door sensing switch will continue to disrupt power, until the door is closed.

As long as the door remains open, there will not be a drip of positive power move through the system. As soon as this situation changes, and the door closes, the system is ready to do it all over again.

Controlling Access. It is the locksmith that has always rendered a valu-

able service to the public, earning their vote of confidence. When a home or commercial structure suffers property loss, or worse yet, a personal injury due to an unauthorized entry, the locksmith will, in all probability, be called to change the locks, re-key the cylinders, or evaluate the situation and make recommendations.

The electric lock can offer a valuable service to the customer who wishes to maintain some degree of control of those who come and go. Someone's going to be there to give your customer what they want...I trust it'll be you! ■

Masterkeying

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That's the first surprise, but the next is that standard security guidelines tell us to avoid sequential patterns for bittings in the system wherever possible, so that the system isn't "telegraphed" to its users.

So instead of just automatically using the first six or seven combinations in each group in order, we will attempt to set up a random pattern in our selection. Illustration two shows one possible way in which this might have been done. Note that not only are the bittings within each group chosen sequentially, but that also the pattern varies from group to group in a random manner.

With automatic assigning of "visual ID" symbols to each bitting based on its position upon the charts, neither of the above two could have been easily accomplished.

A knowledge of proper masterkeying techniques therefore is essential to even a system as simple as the one we chose for our illustration here. Now imagine a large system with complex requirements and see how "simply" the computer programs can deal with it, if they fall so short on a job like this!

For masterkeying application techniques, absolutes don't apply. Instead these require you to evaluate needs versus options and select the best bittings for the job. Computers are not good at that. They only deal effectively with absolutes, or at best variations within a predetermined span.

Even when a computer picks out a "random number," it does so according to a precise mathematical formula. Perhaps it is a formula too complex for our minds to easily comprehend, but after all, it cannot do masterkeying application jobs like we can. Everybody's gotta' be good at something, right? ■